206

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Airline	25WG-3066A, B, -3071A, B, -3072A, B, -3073A, B, -3075A, B, -3077A, B, -3079A, B Tel. Rec.	206-2
Crosley	E30BE, GN, MN, TN (Ch. 30E, 30E-1)	206-3
Dumont	RA-164, RA-165 Tel. Rec. Prod. Chg. Bul. 69	206-1
Emerson	711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 120169B, D, F) Tel. Rec.	206-4
Ford	FAD-18805-C (3MF)	206-5
Grommes	50PG2	206-6
Jewel	5250	206-7
Masco	MB-77	206-8
RCA Victor	2-XF-91 (Ch. RC-1121)	206-9
RCA Victor	17-T-301, U, 17-T-302, U, 17-T-310, U (Ch. KCS78, B) Tel. Rec.	206-10
Silvertone	3174 (Ch. 132.035-2) Tel. Rec.	206-11
Webster-Chicago	121, 122, 123, 124, 125 Record Changer	206-12

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 7 IN SET 189

Earlier production of Dumont Models RA-164 and RA-165 are covered in Photofact Folder 7 in Set 189 and Production Change Bulletin 60, Set 194-1 .

In later production the following changes were made. Whenever applicable these changes may be made in the field on sets which have not been modified in production.

Serial No. 6545600 & Up

TO INCREASE VERTICAL LINEARITY ADJUSTMENT RANGE

R87 was changed rom 18KΩ to 15KΩ.

Serial No. 6549482 & Up

TO IMPROVE PICTURE QUALITY

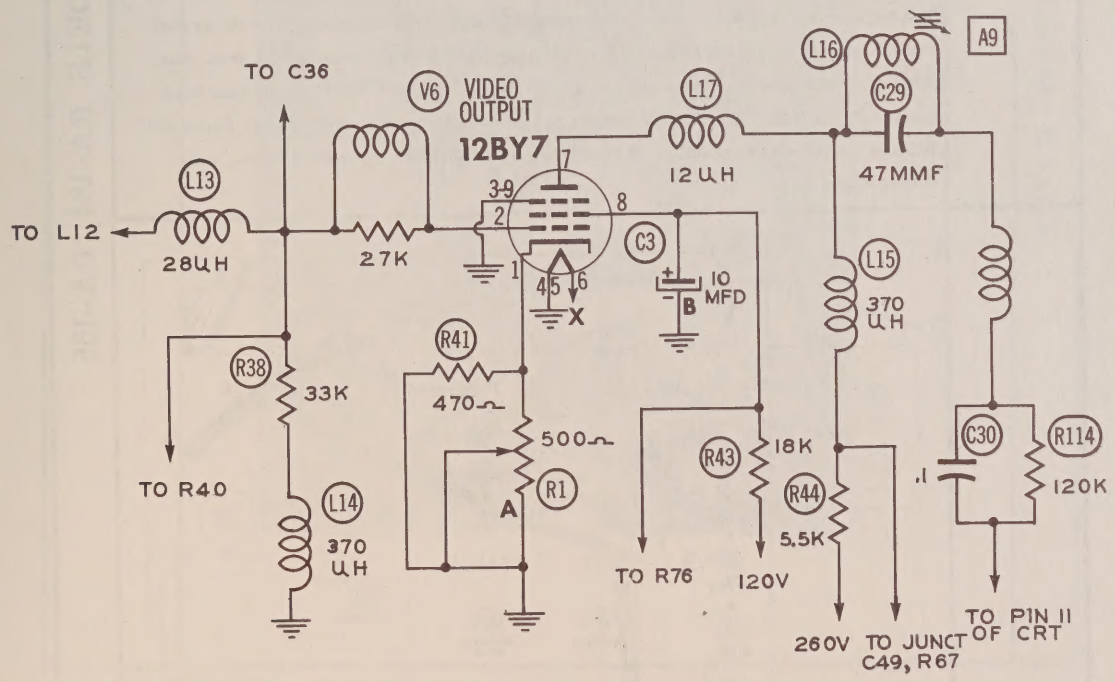
R25 and R35 were changed from 6.8KΩ to 5.1KΩ.

A Video Peaking Coil (Part #21006628) in parallel with a 27KΩ resistor was added between the junction of L13, R40, R38 and C36 and pin 2 (grid) of the 12BY7 Video Amplifier.

L17 was removed and reconnected between pin 7 of the Video Amplifier and the junction of L15, L16 and C29. A different peaking coil (part #21006628) was added between the junction of L16 and C29, and the junction of C30 and R114 in place of L17, which was formerly connected at this point.

A partial schematic showing the revised video amplifier circuit is given below:

In addition the alignment frequencies for L8 and L10 were changed. The new alignment frequency for L8 (A3) is 23.05MC and for L10 (A1) is 25.25MC.



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DUMONT MODELS RA-164, RA-165

PRODUCTION CHANGES
BULLETIN 69

PRODUCTION CHANGES
BULLETIN 69

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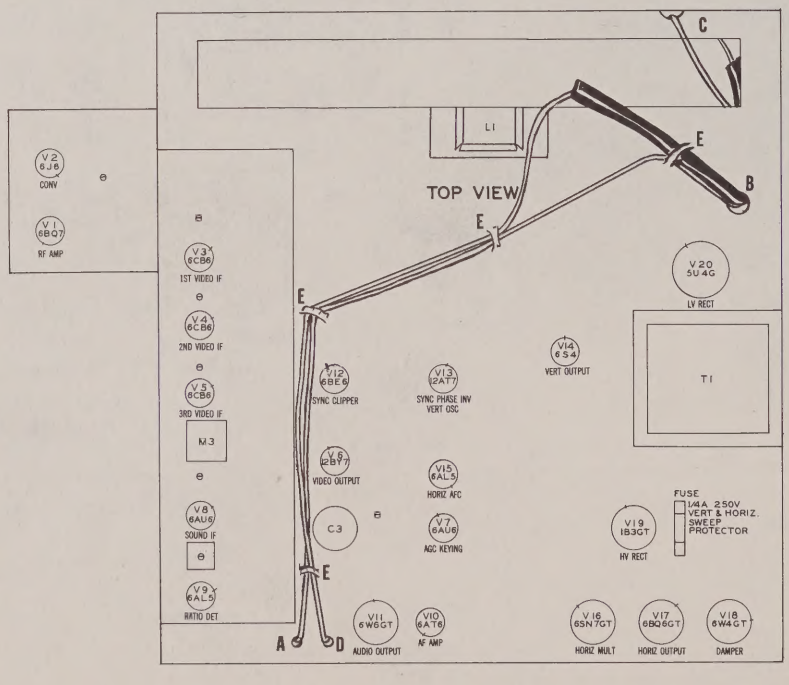
Serial No. 6552074	TO REDUCE TUNER OSCILLATOR RADIATION L8 was reduced in value The new part No. is 21011561. A suppressor coil (Part #21011751) was also added between C18 and the junction of L9 and C19. NOTE. Tuners which include the reduced value for L8 are stamped part #21010783. If replacement of tuner is attempted in the field with the original tuner. (Part #21010781 or 89012601) on chassis incorporating this change, the suppressor coil must be removed from the circuit or L8 and L9 will not align properly.
Serial No. 6555201 & Up	TO IMPROVE THE RANGE OF THE AGC CONTROL The AGC Control (R8) was changed from 50KΩ to 100KΩ (part #01053800).
Serial No. 6574505 & Up	TO ELIMINATE AUDIO BUZZ AND RESIDUAL HUM The following changes were made in lead placement and shielding to improve sound quality. 1. Remove the shielded lead running between the junction of R53-C42 to C43 and the shielded lead from R1B (Volume control) to C44. Reroute the leads as shown in Fig. 1 below. Run the lead from the junction of R53-C42 through holes A, B and C. Run the lead from C44 through hole D, place a 12" piece of spaghetti over the lead and run through hole B. Fasten the leads to the chassis at points indicated by E. Connect leads to volume control as shown in Fig. 2. 2. Run the leads around the edge of the shield. Remove the volume control ground lead, connected between points A and B (Fig. 2), (leave contrast control grounded). Connect the shield of the lead from C44 to point B and the center wire to point C . Connect the shield of the lead from C42-R53 to point D and connect the center wire to C43 at the terminal board. Disconnect the blue lead from the ungrounded end of the contrast control (R1A) and run through hole E, reconnect and dress lead along front of chassis as shown in Fig. 2. (Note: This lead was changed in some earlier Prod. chassis.) 3. Dress C44 close to the rear of the chassis as shown at point A in Fig. 3. Dress lead from volume control as shown at point B in Fig. 3. Pull all excess CRT base leads through hole C (Fig. 3). Dress excess CRT leads away from the audio amplifier stages. Disconnect the blue lead to the CRT from the terminal board and reconnect to pin 6 of V7. Disconnect the jumper wire from pin 6 of V7 to the terminal board. Disconnect R57 and R58 from pin 4 of V11 and connect them to the terminal board lug from which blue lead and jumper were removed. Connect a 100KΩ resistor between pin 4 of V11 and terminal board (junction R57 and R59). Connect a .1MFD bypass capacitor between the terminal and ground. Change R60 (V11 plate load) from 470KΩ to 680KΩ. Disconnect R72 at terminal board, cover with spaghetti, and connect to pin 8 of V6.
	 Fig. 1

(Continued on next page)

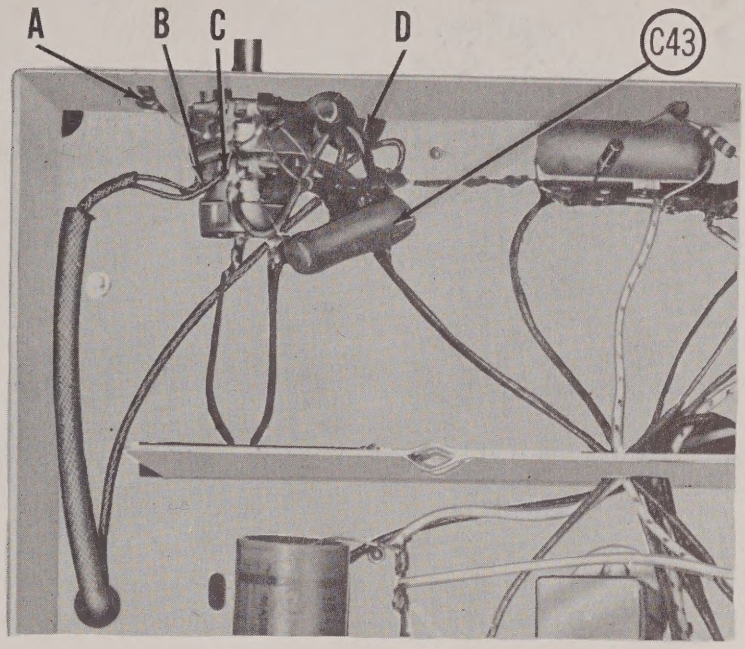


Fig. 2

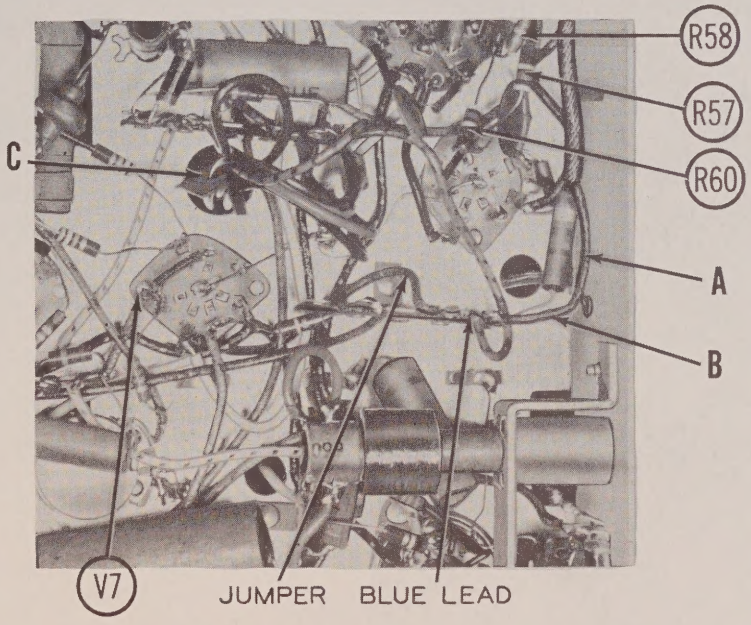
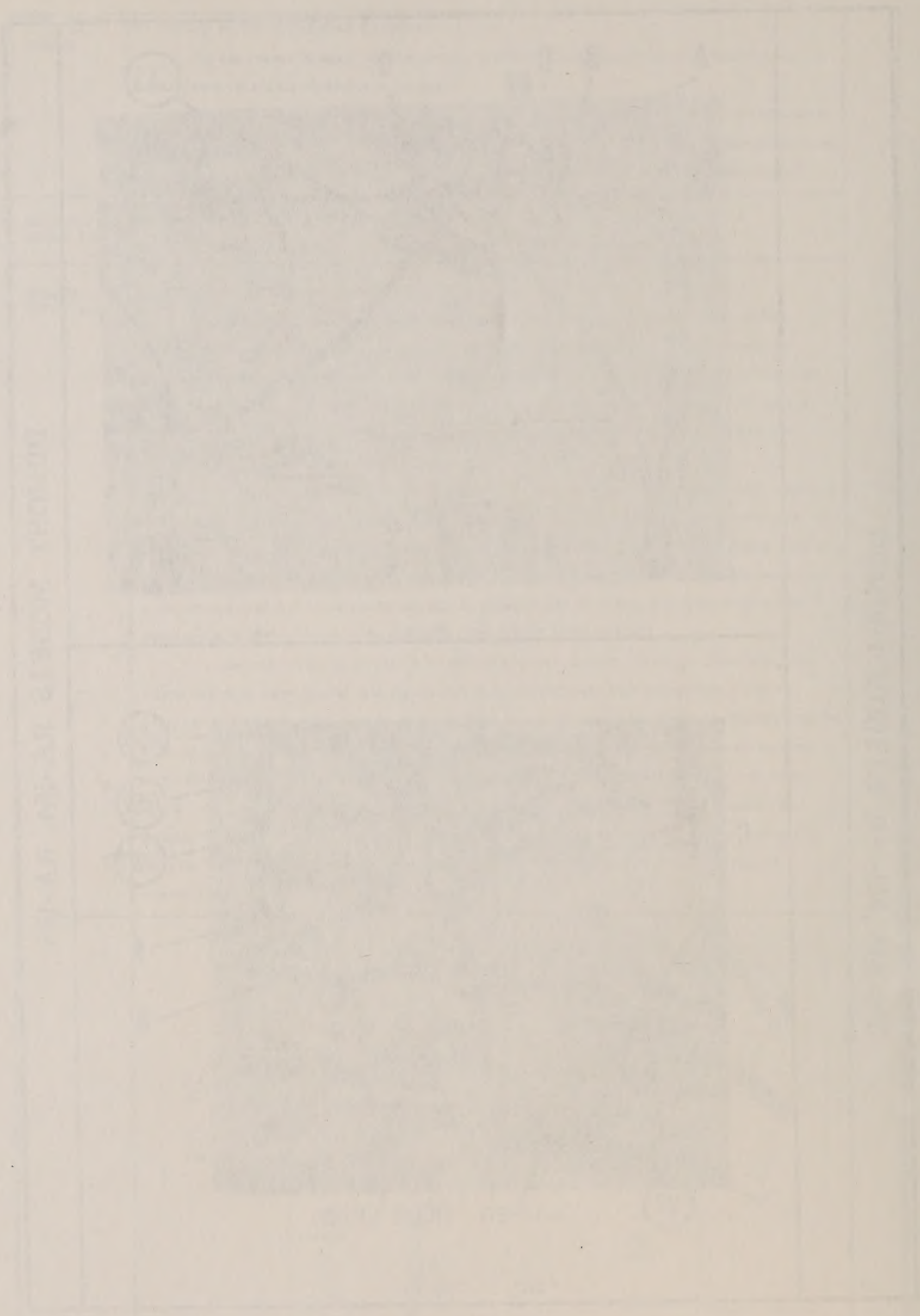


Fig. 3



PHOTOFACT* Folder

*TRADE MARK

AIRLINE MODELS 25WG-3066A, B, C, -3071A, B, C, -3072A, B, C, -3073A, B, C, -3075A, B, C, -3077A, B, C, -3079A, B, C

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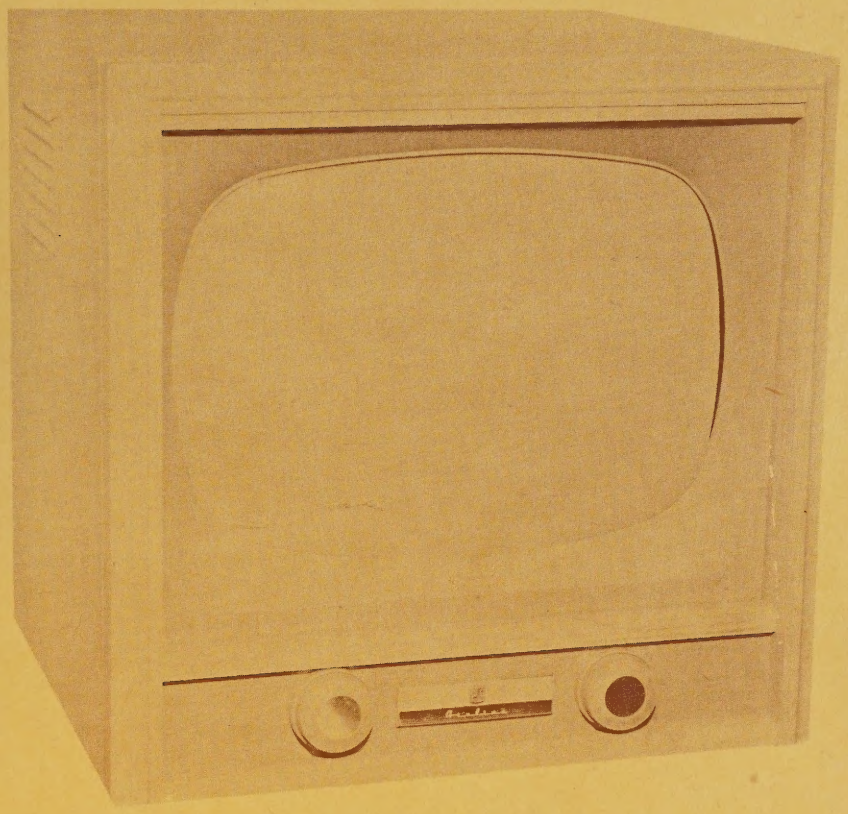

MODEL 25WG-3072C

AIRLINE MODELS 25WG-3066A, B, C, -3071A, B, C, -3072A, B, C, -3073A, B, C, -3075A, B, C, -3077A, B, C, -3079A, B, C

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DATE 6-53 SET 206 FOLDER 2

PHOTOFACT* Folder

*TRADE MARK

AIRLINE MODELS 25WG-3066A, B, C, -3071A, B, C, -3072A, B, C, -3073A, B, C, -3075A, B, C, -3077A, B, C, -3079A, B, C

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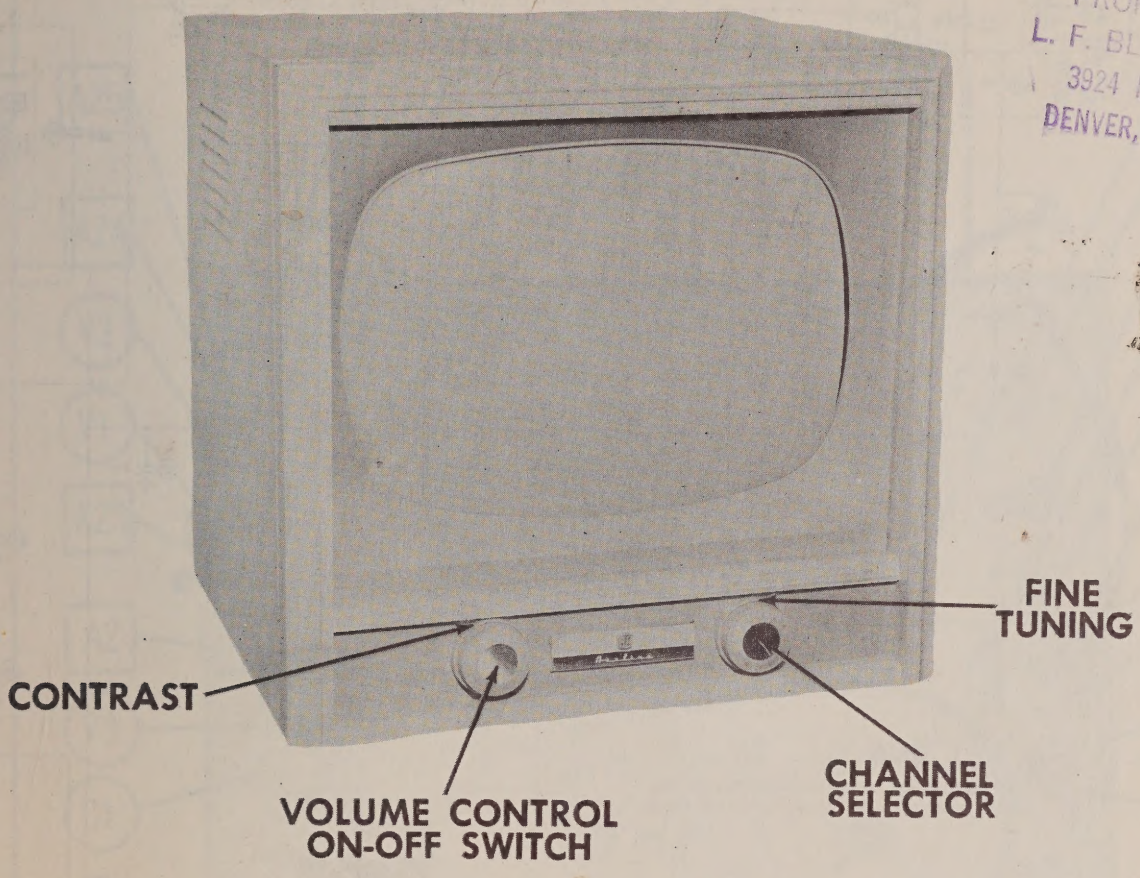

AIRLINE MODELS 25WG-3066A, B, C, -3071A, B, C, -3072A, B, C, -3073A, B, C, -3075A, B, C, -3077A, B, C, -3079A, B, C

AIRLINE MODEL 25WG-3072C

TRADE NAME	Airline Models 25WG-3066A, B, C, -3071A, B, C, -3072A, B, C, -3073A, B, C, -3075A, B, C, -3077A, B, C, -3079A, B, C
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty-Three

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.8 Amp @ 117 Volts AC
TUNING RANGE— Channels 2 thru 13, Video IF 26.2MC, Sound IF 21.7MC (Intercarrier).

INDEX

Alignment Instructions 6,7
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions ..... 13 thru 16
Photographs
Cabinet-Rear View 11
Capacitor and Alignment Identification 4, 9
Chassis-Top View 3
RF Tuner 10
Photographs (Cont)
Resistor and Inductor Identification 19, 20
Resistance Measurements 8
Servicing in the Field 18
Schematic 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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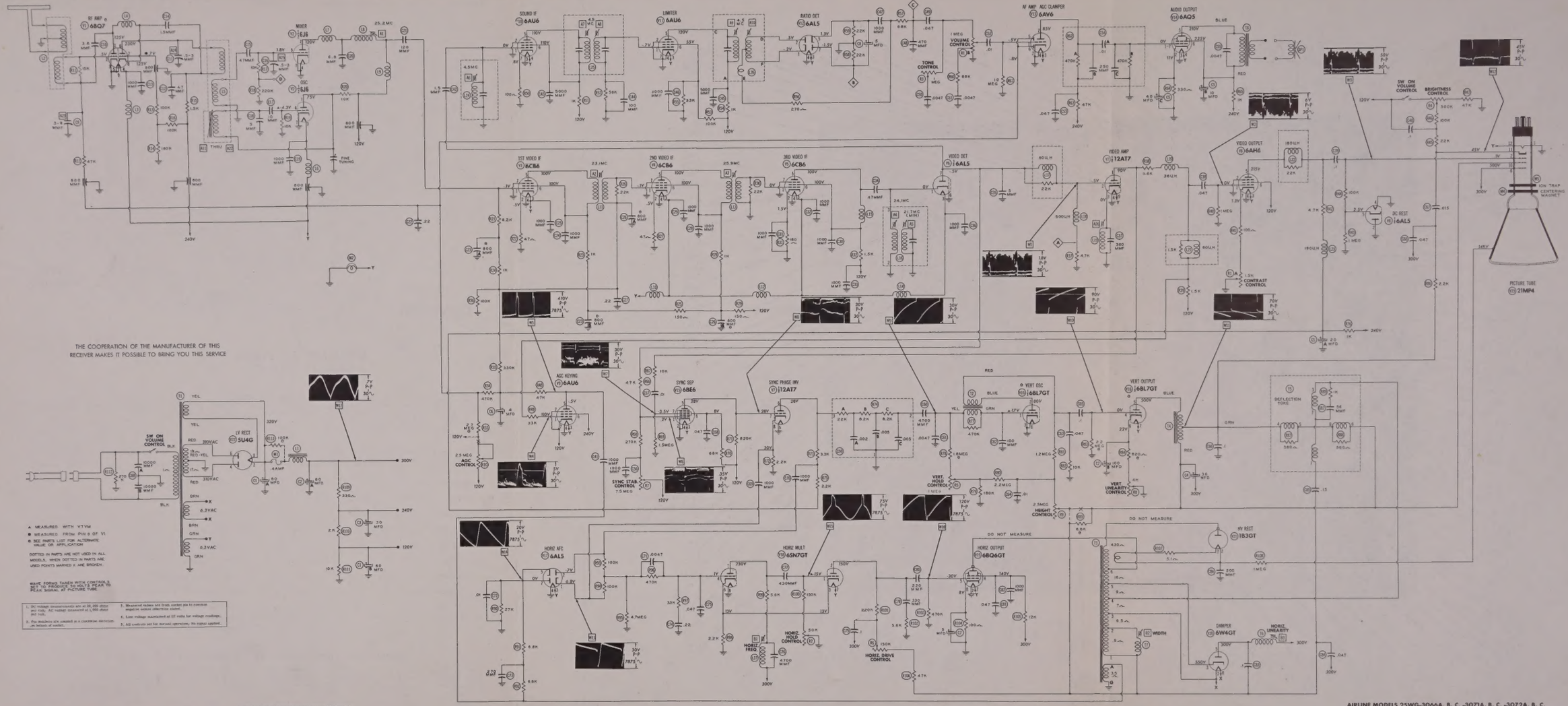

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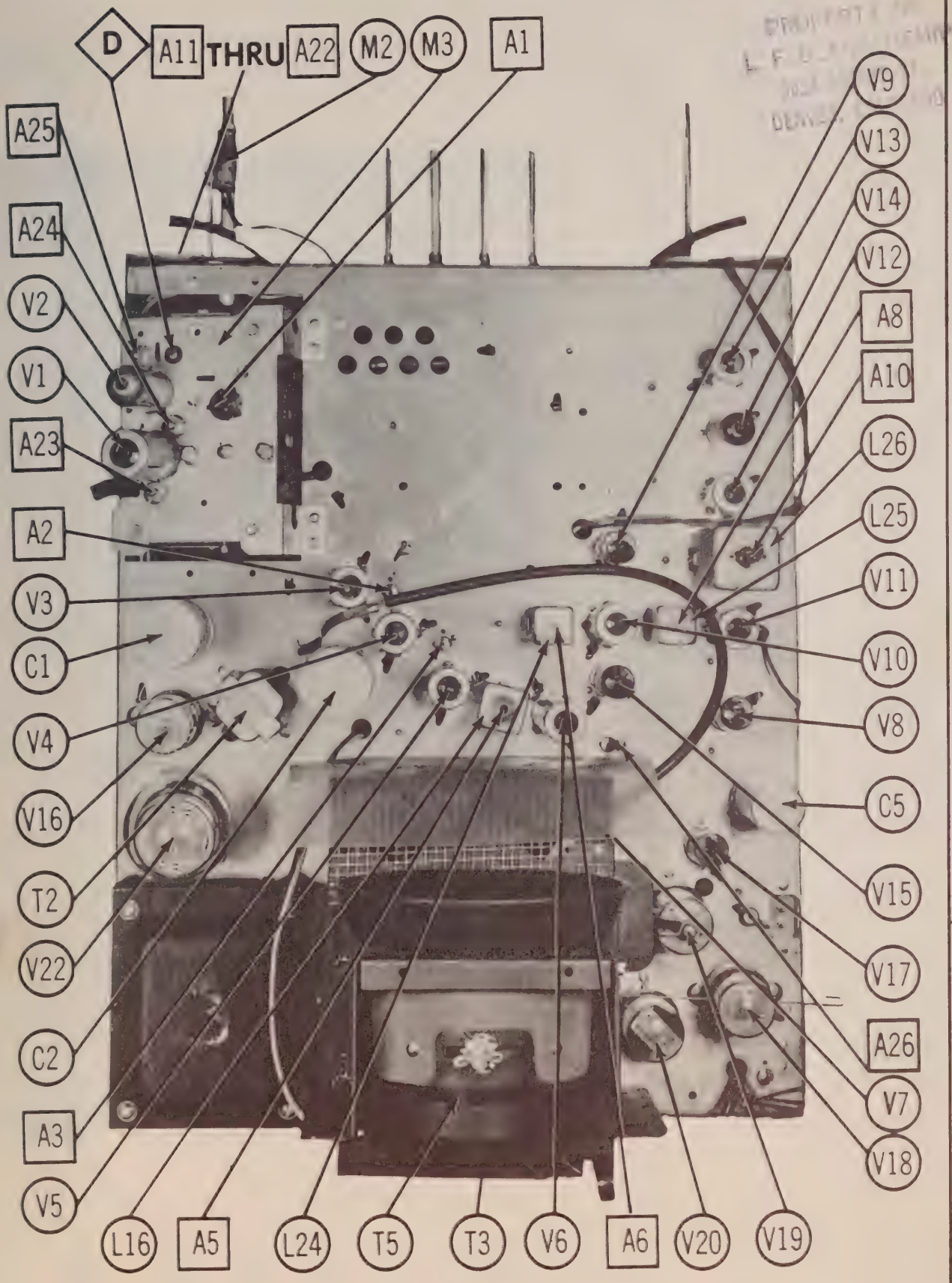
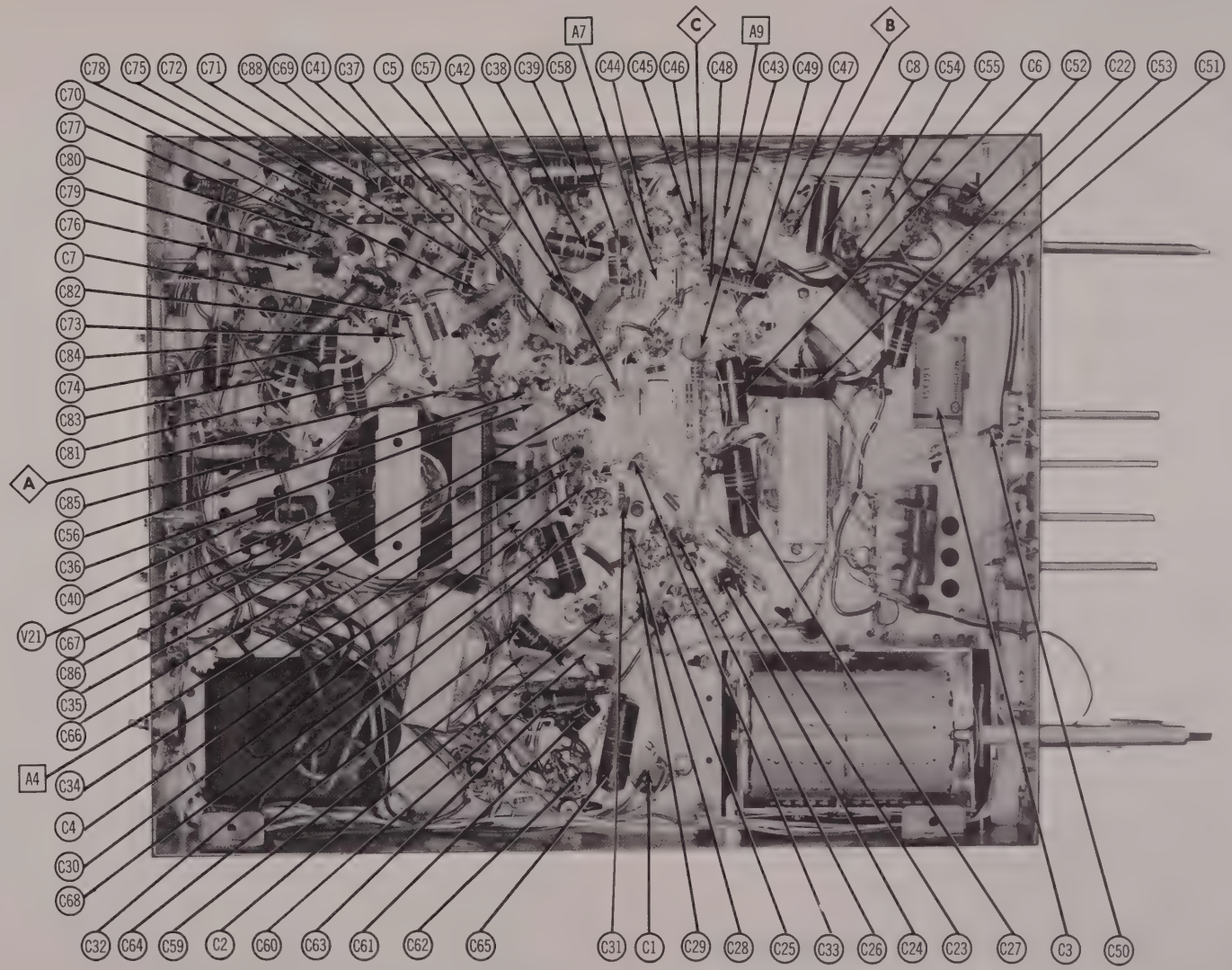
AIRLINE MODELS 25WG-3066A, B, C, -3071A, B, C, -3072A, B, C, -3073A, B, C, -3075A, B, C, -3077A, B, C, -3079A, B, C

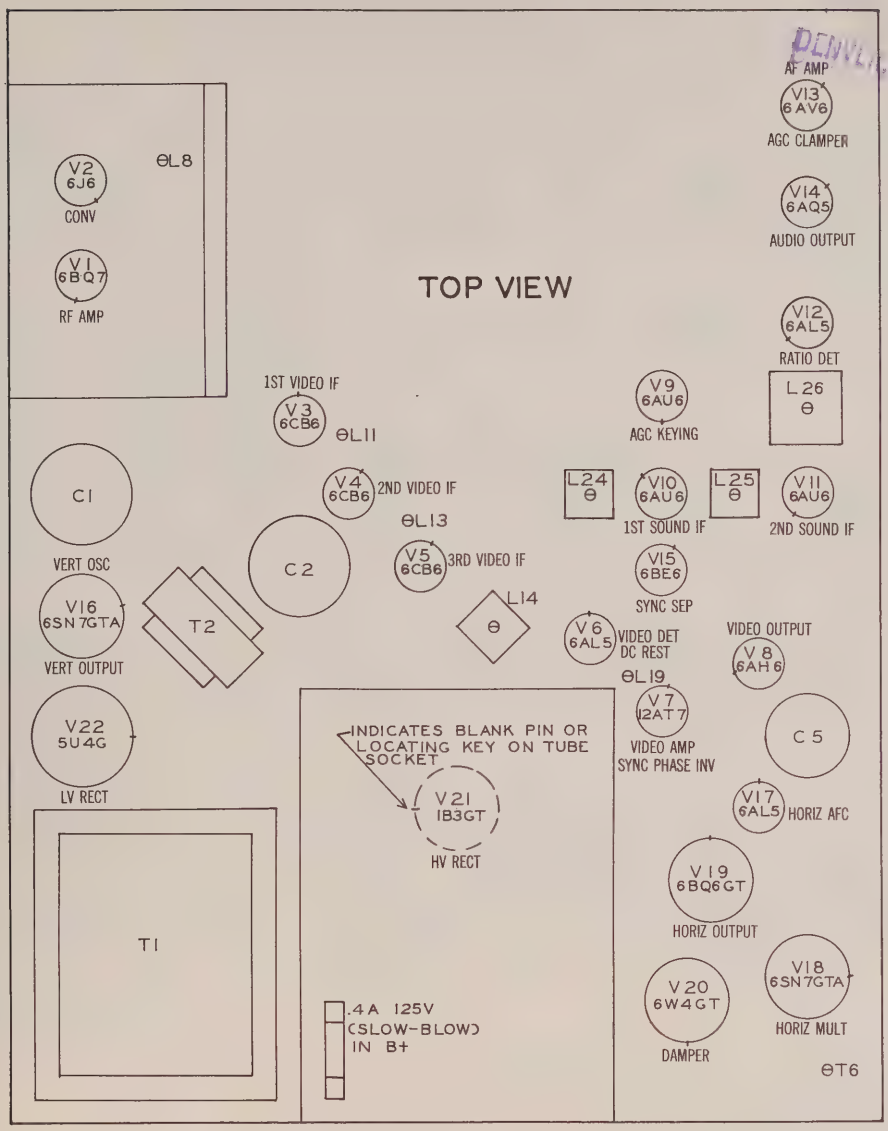


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V22 Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V8, V23
Has pic, no sound-V10, V11, V12, V13, V14
Overloaded picture-V9, V13

SYNC FAILURE
No vert. sync.-V7, V16
No horiz. sync.-V7, V17, V18
No vert. or horiz. sync.-V7, V15

SWEEP FAILURE
No raster, has sound-V18, V19, V20, V21, V23
No vertical deflection-V16
Poor vert. linearity or foldover-V16
Poor horiz. linearity or foldover-V18, V19, V20
Narrow picture-V18, V19, V20, V21, V22
Vert. off freq.-V7, V16
Horiz. off freq.-V7, V17, V18

DENVER, COLORADO

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, (V18).

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 4.5 volts battery to the ungrounded side of C27.
Connect the positive lead to chassis.
Make scope or VTVM connections through filter network as in Fig. 1.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25.2MC (Unmod)	Any	DC probe to point (A), Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator output to maintain less than 2 Volts at VTVM.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.7MC 23.0MC 23.5MC 25.25MC 26.2MC	Any	Vert. amp to point (A). Low side to chassis.		Check for response similar to Fig. 2. If necessary retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 7 (plate) of 6AL5 (V6A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B), Common to chassis.	A6, A7, A8, A9,	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (C). Common to chassis.	A10	Adjust for a zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 7 (plate) of 6AL5 (V6A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp to point (B). Low side to chassis.	A6, A7, A8, A9	Disconnect stabilizer capacitor C8. Adjust for curve of maximum amplitude and symmetry as in Fig. 3.
8.	"	"	"	"	"	Vert. amp to point (C). Low side to chassis.	A10	Reconnect capacitor C8. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point (A). Low side to chassis.	A11	Adjust to place asound marker in notch as in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A12	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A19	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A20	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A22	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Remove 4.5 volt battery as used under oscillator alignment. Connect the negative lead of a 1½ volt battery to the ungrounded side of C22.
Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10KΩ to point (D). Low side to chassis.	A23, A24, A25,	Adjust for response curve similar to Fig. 6.
11.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 6. If markers fall below 70% on any channel make compromise adjustments of A23, A24, A25 with channel switch set to that channel then check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10 MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

4.5MC TRAP ALIGNMENT

Turn the set on and tune in a TV test pattern.
Adjust A26 for maximum vertical wedge definition.

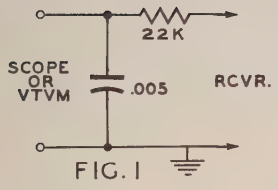


FIG. 1

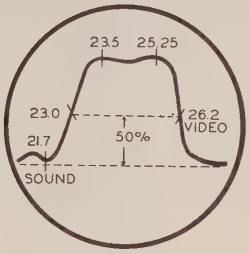


FIG. 2

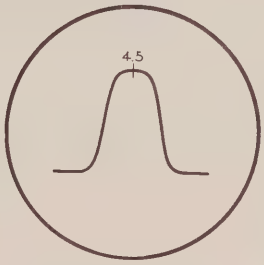


FIG. 3

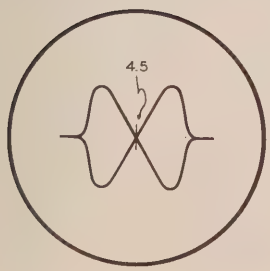


FIG. 4

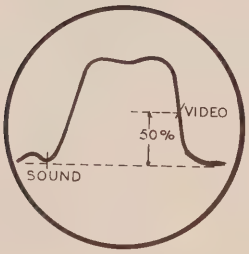


FIG. 5

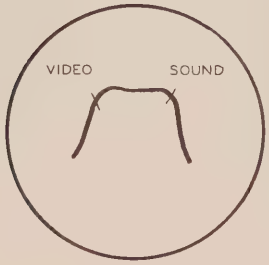
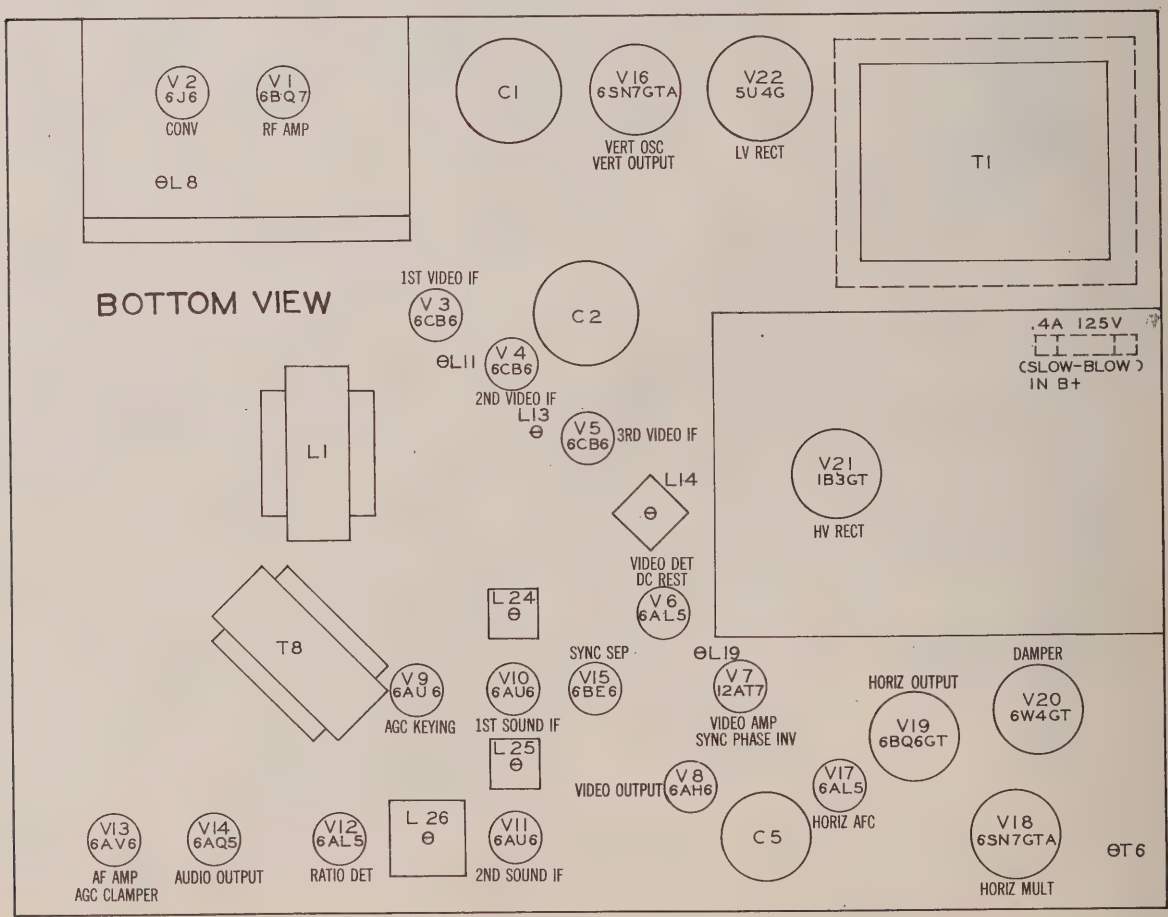


FIG. 6

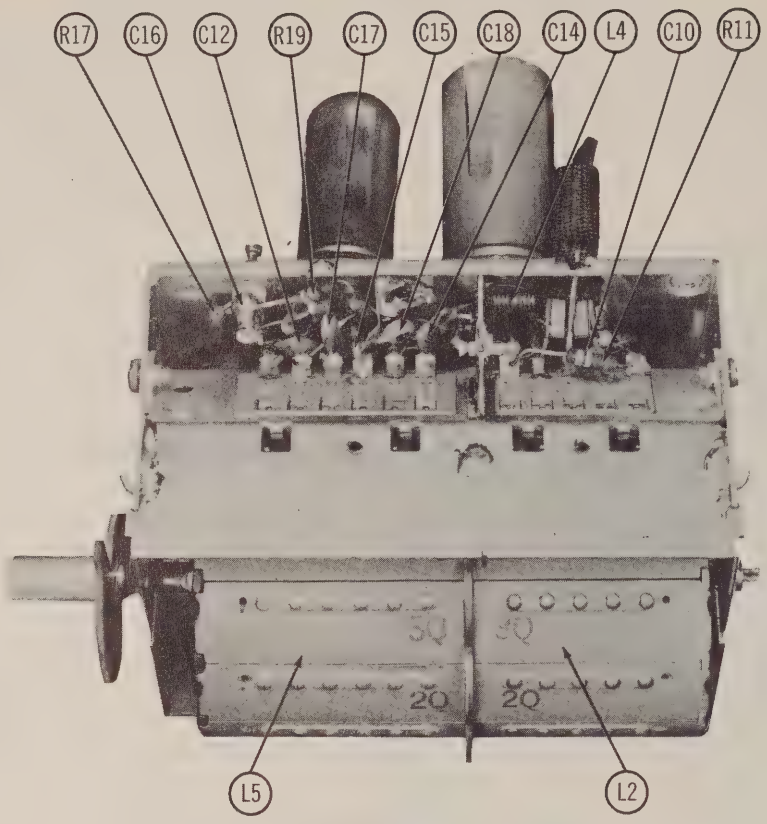
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	900KΩ	0Ω	0Ω	0Ω	†1.9KΩ	170KΩ	INF	0Ω
V 2	6J6	†12.4KΩ	†2.4KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 4	6CB6	100KΩ	47Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 5	6CB6	.3Ω	180Ω	.1Ω	0Ω	†3.9KΩ	†3.9KΩ	0Ω		
V 6	6AL5	.3Ω	0Ω	.1Ω	0Ω	1 Meg	0Ω	4.7KΩ		
V 7	12AT7	†9KΩ	4.7KΩ	.2Ω	0Ω	0Ω	†6.8KΩ	†820KΩ	2.2KΩ	.1Ω
V 8	6AH6	1 Meg.	0Ω	.1Ω	0Ω	†7.1KΩ	†2.4KΩ	400Ω		
V 9	6AU6	†37KΩ	†2.4KΩ	.1Ω	0Ω	475KΩ	†378Ω	†2.4KΩ		
V 10	6AU6	2.7Ω	0Ω	0Ω	.1Ω	†3.4KΩ	†3.4KΩ	100Ω		
V 11	6AU6	56KΩ	0Ω	.1Ω	0Ω	†3.4KΩ	†30KΩ	0Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	22KΩ	INF	22KΩ		
V 13	6AV6	10 Meg	0Ω	.1Ω	0Ω	900KΩ	900KΩ	†520KΩ		
V 14	6AQ5	470KΩ	330Ω	0Ω	.1Ω	†1.8KΩ	†1.4KΩ	470KΩ		
V 15	6BE6	52KΩ	0Ω	.1Ω	0Ω	†820KΩ	†70KΩ	1.5 Meg		
V 16	6SN7GTA	2.5 Meg.	♦2.1 Meg	0Ω	2.2Meg	♦8.3KΩ	3KΩ	.1Ω	0Ω	
V 17	6AL5	4.8 Meg	4.8 Meg	.1Ω	0Ω	9KΩ	INF	9KΩ		
V 18	6SN7GTA	190KΩ	♦330KΩ	2.2KΩ	5.1Meg	†5.7KΩ	2.2KΩ	.1Ω	0Ω	
V 19	6BQ6GT	6KΩ	0Ω	INF	†12KΩ	470KΩ	♦10KΩ	.1Ω	100Ω	Top Cap ♦16Ω
V 20	6W4GT	†55Ω	INF	1 Meg.	INF	†70Ω	†55Ω	♦18Ω	♦18Ω	
V 21	1B3GT	PIN 1 - 8 HAVE INF RESISTANCE								Top Cap ♦446Ω
V 22	5U4G	INF	12.5KΩ	INF	17Ω	2.1KΩ	18.5Ω	INF	12.5KΩ	
V 23	21MP4	0Ω	1.2 Meg	Pin 6 †48.5Ω	Pin 10 ♦6.8KΩ	Pin 11 160KΩ	Pin 12 .1Ω			

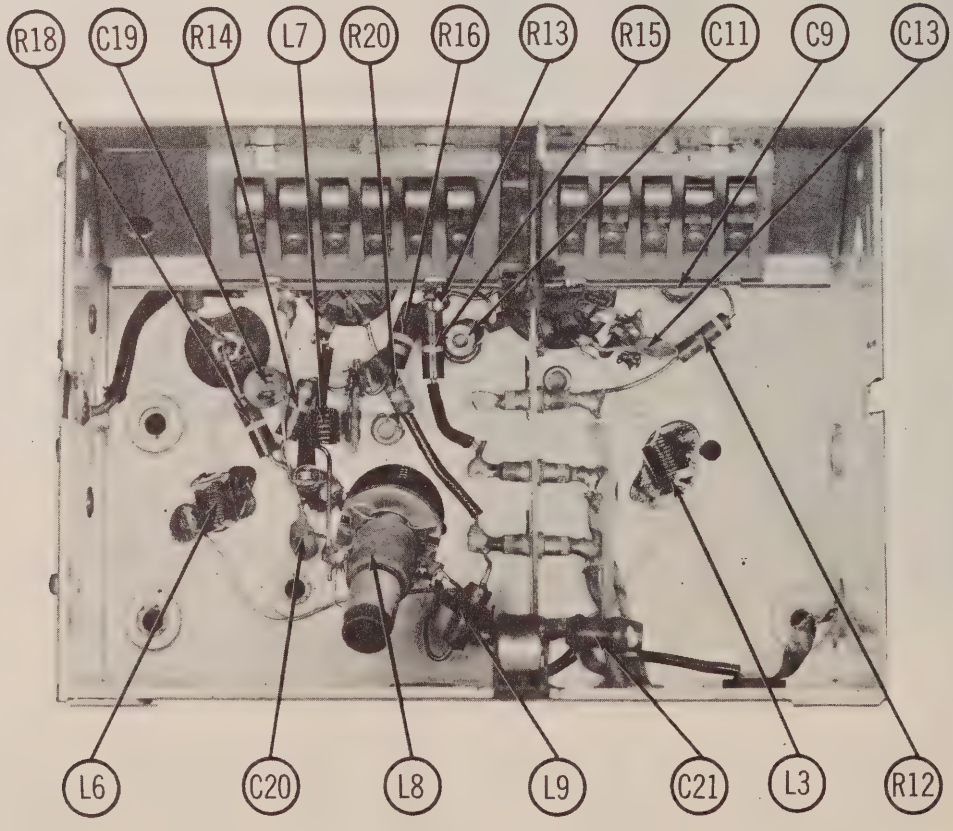
♦ MEASURED FROM PIN 3 OF V20.
† MEASURED FROM PIN 2 OF V22.



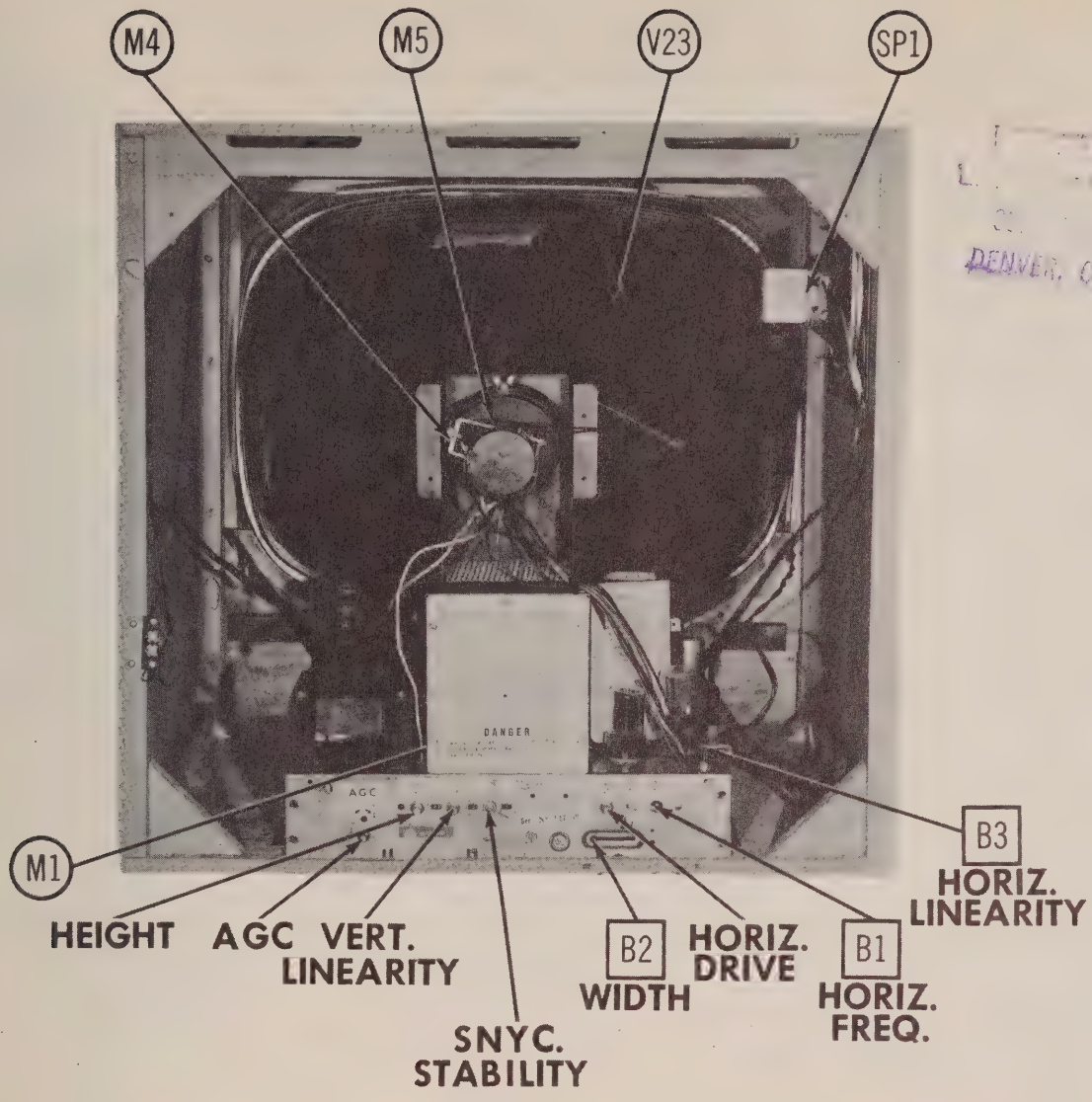
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

DENVER, COLORADO

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive control clockwise as far as possible without the presence of vertical white lines in the center of the picture.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

Adjustment of the horizontal drive control or of B3 may affect horizontal oscillator alignment so that B1 will need readjustment.

Adjustment of B3 will make it necessary to readjust the horizontal drive control.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See LOSS OF HIGH VOLTAGE.

INSUFFICIENT SWEEP

If width control cannot correct this trouble, substitute V18, V19, V20 and V22. Check amplitude of waveform W16,

If Insufficient	If Sufficient
Check components of horizontal oscillator and coupling network between V18 and V19.	Check T3, T5A, T6, T7 and associated components. Check components of horizontal output tube and damper.

DRIVE LINE(S)

Substitute V19 and V20. Check C78, C79 and components of damper circuit.

COMPRESSED LEFT SIDE

Substitute V19 and V20. Check T3, T5A, T6 and associated components.

FOLDS

Substitute V20 and check associated components.

XMAS TREE EFFECT

Substitute V18 and check C76 and L27.

VERTICAL

LOSS OF SWEEP

Check waveform W10,

If Unsatisfactory	If Satisfactory
Substitute V16. Check T2 and coupling components between V16 A and V16 B.	Substitute V16. Check T4 and T5B. Check components of vertical output stage.

INSUFFICIENT SWEEP

Substitute V16. Follow procedure outlined under LOSS OF SWEEP.

COMPRESSED AT BOTTOM

Check C65 for leaky condition. Check C2B for open.

COMPRESSED AT TOP

If adjustment of height and vertical linearity control does not correct this trouble, check C63 for open.

FOLDS

Substitute V16 and check C2B for open and C65 for leaky condition.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution, V7, V15, V17 and V18. Check waveform W14,

If Insufficient	If Sufficient
Check waveform W 13,	Check components of V18. Check coupling components between V17 and V18.

Check waveform W 13,

If Insufficient	If Sufficient
Check components of V7B and V15. Check coupling capacitor C69.	Check components of V17.

CRITICAL HOLD

Substitute V17 and V18. If no change is noted, follow procedure outlined under LOSS OF HORIZONTAL SYNC.

PULLING PICTURE

Substitute V17 and check associated components., Check V7, V15, V17 and V18 for filament to cathode leakage.

VERTICAL

LOSS OF SYNC

Check by substitution V7, V15, and V16. Check waveform W9,

If Unsatisfactory	If Satisfactory
Check components of V15 and V7B. Check integrating network between V7B and V16. Check coupling capacitor C60.	Check vertical oscillator components, particularly T2 and C62.

CRITICAL HOLD

Substitute V15 and V7. Follow procedure outlined under LOSS OF SYNC

TRIGGERING

Substitute V16. Dress filament leads away from grid leads of vertical oscillator.

VIDEO

SOUND BARS

Check adjustment of A26(4.5 MC trap). Check setting of local oscillator and alignment of video IF stages.

POOR RESOLUTION

Check alignment of tuner and video IF stages. Substitute V8 and check associated components.

SMEAR

Substitute V8 and check circuit components, particularly the peaking coils.

ONE WIDE BLACK BAR ACROSS THE PICTURE.

Check tuner, video IF, video detector, Video amplifier and video output tubes for filament to cathode leakage.

POOR CONTRAST

Check waveform W3,

If Unsatisfactory	If Satisfactory
Substitute video IF, video detector, video amplifier and video output tubes. Check associated components.	Check picture tube and associated components.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7	6BQ7	9AJ	
V1B	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector - DC Restorer	6AL5	6AL5	6BT	
V7	Video Amplifier - Sync Phase Inv.	12AT7	12AT7	9A	
V8	Video Output	6AH6	6AH6	7BK	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier - AGC Clamper	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
V15	Sync Separator	6BE6	6BE6	7CH	
V16A	Vert. Oscillator - Vert. Output	6SN7GTA	6SN7GTA	8BD	Used in "C" Models
V16B	Vert. Oscillator - Vert. Output	6BL7GT	6BL7GT	8BD	Used in "A" & "B" Models
V17	Horiz. AFC	6AL5	6AL5	6BT	
V18	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V19	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V23	21MP4	21MP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▬80	400	45X390	AFH3-46		CO37		FP378	R1341	
B	▲60	400								
C2A	▬80	400	45X391	AFH3-142		C109		FP375	TVL-3764	
B	▲100	50								
C3	30	400	45X393	PRS450/30		BR3045A		TC77	TVA-1711	
C4	30	400	45X393	PRS450/30		BR3045A		TC77	TVA-1711	
C5A	■20	400	45X392	AFH3-137		CO97		FP366	TVL-3751	
B	▲10	400								
C	40	50								
C6	4	100	45X361	PRS150/4		BR415		TC40	TVA-1402	
C7	5	25	45X378	PRS150/4		BR550		TC30	TVA-1203	
C8	5	25	45X378	PRS150/4		BR550		TC30	TVA-1203	
C9	3-9		31B-207		829-10					
C10	3.6		CD8C3R6C							
C11	.5-3		31B-206		829-3			CT565A		
C12	47		CD8Q470K	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C13	1000		CD8X102Z	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C14	1.5		CD8C1R5M	SI1.5NP0	TCZ-1.5		NP0K-1R5	NT-5515	5TCCB-V15	
C15	47		CD8Q470K	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C16	.5-3		31B-206		829-3			CT565A		
C17	10		CD10C100K	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C18	5		CD8U050C	SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C19	1000		CD8X102Z	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	6.8		CD8C6R8C	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C21	120		13D-055	SI120	D6-121	TM5T12	GP2K-121	UC- 5312	5GA-T12	
C22	.22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	2TM-P22	
C23A	800			BPD-0008	DD-801	TM5T8	812-001	DCD-521	5GA-T8	Note 1
B	800			BPD-0008	DD-801	TM5T8			5GA-T8	
C24	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C26A	800			BPD-0008	DD-801	TM5T8	812-001	DCD-521	5GA-T8	Note 1
B	800			BPD-0008	DD-801	TM5T8			5GA-T8	
C27	.22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	2TM-P22	
C28	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C30	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C31	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C32	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C33	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C34	47		47X603				N330L-470			
C35	5		47X562	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C36	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C37	360	500	47X568	1479-00035						
C38	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C39	.1	400	RCP10M4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C40	.1	200	RCP10M2104M	P288-1	DF-104	PTE4P1		PT401	4TM-P1	
C41	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C42	1.5		47X584	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C43	5000		47X507	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	100		47X604	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C45	5000		47X507	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C46	5000		47X507	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C47	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C48	470	500	47X525	1469-0005		5R5T5		MCB245	MS-35	
C49	.047	200	RCP10M2473M	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C50	.0047	400	RCP10M4472M	P688-0047	D6-472	PTE6D47	GP2-333-502	PT6247	6TM-D47	

PROPERTY OF L. F. BLANKENSHIP 3924 [illegible] DRIVE

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C51	.0047	400	RCP10M4723M	P688-0047	D6-472	PTE5D47	GP2-333-502	PT6247	6TM-D47	
C52	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT4141	4TM-S1	
C53	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C54A	.01									
B			*76X5		*PC-80		*1404-01		*102C1	
C	250									
C55	.0047	600	RCP10M0473M	P688-0047	D6-472	PTE5D47	GP2-333-502	PT6247	6TM-D47	
C56	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C57	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT4141	4TM-S1	
C58	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C58A	.002			P688-002		PTE8D2		PT622		
B	.005		†76X7	P688-005	†PC-100	PTE8D5	†1405-01	PT625	†101C1	
C	.005			P688-005		PTE8D5		PT625		
C60	4700	500	47X543	1467-005	D6-472	1D6D5	GP2-333-502	MC465	1FM-25	
C61	.0047	400	RCP10M4472M	P688-0047	D6-472	PTE5D47	GP2-333-502	PT6247	6TM-D47	
C62	100		47X504	P488-01	DD-102	UC-531	502A-T1	DC-531	5CA-T1	
C63	.047	600	RCP10M6473M	P688-047	DF-503	PTE8S47		PT6147	6TM-S47	
C64	.01	600	RCP10M6103M	P688-01	D6-103	PTE8S1	GP2-333-103	PT6141	6TM-S1	
C65	100	600	RCP10M6104M	P688-1	DF-104	PTE8P1		PT6101	6TM-P1	
C66	.1	600	RCP10M6104M	P688-1	DF-104	PTE8P1		PT6101	6TM-P1	
C67	.015	600	RCP10M6153M	P688-015		PTE8S15		TP411	6TM-S15	
C68	.047	600	RCP10M6473M	P688-047	DF-503	PTE8S47		PT6147	6TM-S47	
C69	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C70	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C71	.0047	400	RCP10M4472M	P488-0047	D6-472	PTE4D47	GP2-333-502	PT6247	6TM-D47	
C72	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT4141	4TM-S1	
C73	270	500	RCM26A227K	1469-0003	TCZ-270	SR5T3		MCB241	MS-33	
C74	.22	200	RCP10M2234M	P288-P22		PTE4P22		PT4P25	2TM-P22	
C75	.047	200	RCP10M2473M	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C76	4700	500	47X543	1464-005		1DR5D5		MCB465	MS-25	
C77	430	500	RCM26B431K							
C78	330	500	47X570							
C79	.1	400	RCP10M4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C80	220	500	RCM20A221K	1469-00025	TCZ-220	SR5T25		MCB240		
C81	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C83	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C83	.1	400	RCP10M4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C84	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C85	.15	400	RCP10M4154M	P488-15		PTE4P15		TP417	4TM-P15	
C88	500	20000	47X560	HV30C	TV3-507	MM-C20TS			20DK-T5	
C87	56	1500	47X598						20GA-Q56	
C88A	10000		76X8	BPD-01	DD-3-103	TM5D81	811-01	DC-511	5HK-S81	
B	10000			BPD-01			811-01	DC-511		

Note 1. Some Models use 2 x 1000MMF in this application (part #80X3).
† Items C59A, C59B, C59C, R74A, R74B, R74C are combined in one unit.
* Items C54A, C54B, C54C, R62A, R63B are combined in one unit.
When replacing items separately, C54B and C54C should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	76X12	QJ-418*	RTV-405			Contrast-Panel Volume-Switch Tapped@250KΩ
B	1 Meg.	½						-Rear Horizontal Hold,
R2A	50KΩ	½	40X361-C	QU-123	AG-44-S	AB-31	U-35-	Attach to R2A
B	Shaft		Not Req.	NQ	RS-3/16	AK-4	DS-37	Vert. Hold,
R3A	1 Meg.	½	B40X334-D	QU-137	AG-61-S	AB-59	U-54	Tone
B	Shaft		Not Req.	NQ	RS-3/16	AK-4	DS-37	Attach to R3A
R4A	500KΩ	½	B40X333-A	QJ-133	AG-58-S	AB-59	U-50	Brightness
B	Shaft		Not Req.	Not Req.	RSS-3	AK-4	Not Req.	Attach to R4A
R5A	1 Meg.	½	B40X334-D	QU-137	AG-61-S	AB-59	U-54	Vert. Hold,
B	Shaft		Not Req.	NQ	RS-3/16	AK-4	DS-37	Attach to R5A
R6A	150KΩ	½	B40X331-A	QJ-129	AG-46-S	AB-46	U-43	Horizontal Drive
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7	7.5 Meg.	½	40X363-A					Sync Stability
R8A	4000Ω	½	40X368	QU-114	AG-80-S	AB-9	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9A	2.5 Meg.	½	B40X364	QU-239	AG-84-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R9A
R10A	2.5 Meg.	½	B40X364	QU-239	AG-84-S	AB-83	SU-565	AGC
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R10A

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-109 & P1-310 (Front)
B13-137X & R2-322 (Rear) & SWITCH 76-2.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA AIRLINE PART No.	IRC PART No.	NOTES
R11	15KΩ	½	12A-094	BTS-15K	
R12	47KΩ	½	12A-039	BTS-47K	
R13	100KΩ	½	12A-094	BTS-100K	
R14	150KΩ	½	12A-197		
R15	1500Ω	½	12A-183	BTS-1500	
R16	100KΩ	½	12A-106	BTS-100K	
R17	10KΩ	½	12A-040	BTS-10K	
R18	1200KΩ	½	12A-041		
R19	10KΩ	½	12A-040	BTS-10K	
R20	10KΩ	½	12A-040	BTS-10K	
R21	8200Ω 5%	½	B63523	BTS-8200 5%	
R22	47Ω	½	B63470	BTS-47	
R23	1000Ω	½	B85102	BTS-1000	
R24	1000Ω	½	B85102	BTS-1000	
R25	150Ω	½	B85151	BTS-150	
R26	22KΩ	½	B83223		
R27	47Ω	½	B63470	BTS-47	
R28	1000Ω	½	B85102	BTS-1000	
R29	150Ω	½	B85151	BTS-150	
R30	22KΩ	½	B83223		
R31	180Ω	½	B64181	BTS-180	
R32	1500Ω	½	B84152	BTS-1500	
R33	2.7Meg	½	B84275	BTS-2.7Meg	Note 1
R34	470KΩ	½	B84474	BTS-470K	
R35	330KΩ 5%	½	B83334	BTS-330K 5%	
R37	4700Ω 5%	½	B83472	BTS-4700 5%	
R38	5600Ω	1	C84562	BTA-5600	
R39	1500Ω	½	B84152	BTS-1500	
R40	1Meg	½	B84105	BTS-1Meg	
R41	100Ω	½	B64101	BTS-100	
R43	4700Ω 5%	1	C83472	BTA-4700 5%	
R43	1Meg	½	B84105	BTS-1Meg	
R44	100KΩ	½	B85104	BTS-100K	
R45	22KΩ	½	B84223	BTS-22K	
R46	100KΩ	½	B85104	BTS-100K	
R47	47KΩ	½	B85473	BTS-47K	
R48	47KΩ	½	B84473	BTS-47K	
R49	33KΩ	½	B84333	BTS-33K	
R50	100Ω	½	B64101	BTS-100	
R51	1000Ω	½	B85102	BTS-1000	
R52	56KΩ	½	B84563	BTS-56K	
R53	100KΩ	½	B84104	BTS-100K	
R54	1000Ω	½	B85102	BTS-1000	
R55	33KΩ	½	B84333	BTS-33K	
R56	270Ω	½	B84271	BTS-270	
R57	68KΩ	½	B84683	BTS-68K	
R58	22KΩ	½	B84223	BTS-22K	
R59	22KΩ	½	B84223	BTS-22K	
R60	68KΩ	½	B84683	BTS-68K	
R61	10Meg	½	B85106	BTS-10Meg	

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA AIRLINE PART No.	IRC PART No.	NOTES
R62A	470KΩ	½	*76X5	BTS-470K	
B	470KΩ	½		BTS-470K	
R63	47KΩ	½	B85473	BTS-47K	
R64	330Ω	½	B84331	BTA-330	
R65	1000Ω	2	B84102	BTH-1000	
R66	47KΩ	½	B84473	BTS-47K	
R67	10KΩ	½	B84103	BTS-10K	
R68	270KΩ	½	B84274	BTS-270K	
R69	1.5Meg	½	B84155	BTS-1.5Meg	
R70	68KΩ	½	B84683	BTS-68K	
R71	820KΩ	½	B84824	BTS-820K	
R72	2200Ω 5%	½	B83222	BTS-2200 5%	
R73	3300Ω	½	B84322	BTS-3300	
R74A	22KΩ			BTS-22K	
B	8200Ω		†76X7	BTS-8200	
C	8200Ω			BTS-8200	
R75	2200Ω 5%	½	B83222	BTS-2200 5%	
R76	100Ω	1	C84102	BTA-1000	
R77	470KΩ	½	B85474	BTS-470K	
R78	1.8Meg	½	B84185	BTS-1.8Meg	Note 2
R79	180KΩ	½	B84184	BTS-180K	
R80	2.2Meg	½	B84225	BTS-2.2Meg	
R81	1.2Meg	½	B84125	BTS-1.2Meg	
R82	10KΩ	½	B84103	BTS-10K	
R83	2.2Meg	½	B84225	BTS-2.2Meg	Note 3
R84	820Ω	½	B84821	BTS-820	Note 4
R85	6800Ω	½	B84863	BTS-6800	Note 5
R86	2200Ω	½	B84222	BTS-2200	
R87	560Ω	½	B84561	BTS-560	
R88	500Ω	½	B84561	BTS-560	
R89	1000Ω	½	B85102	BTS-1000	
R90	27KΩ	½	B84273	BTS-27K	
R91	6800Ω	½	B84682	BTS-6800	
R92	6800Ω	½	B84682	BTS-6800	
R93	100KΩ	½	B84104	BTS-100K	
R94	100KΩ	½	B84104	BTS-100K	
R95	4.7Meg	½	B85475	BTS-4.7Meg	
R96	470KΩ	½	B85474	BTS-470K	
R97	33KΩ	½	B84333	BTS-33K	
R98	2200Ω 5%	½	B83222	BTS-2200 5%	
R99	560Ω	½	C83562	BTA-5600	
R100	150KΩ	½	B83154	BTS-150K	
R101	220KΩ	½	B83224	BTS-220K	
R102	560Ω	½	B84563	BTS-5600	
R103	470KΩ	½	B84474	BTS-470K	
R104	10Ω	3	D84101	BW-3-100	
R105	12KΩ	3	43X276	13/4A-12K	
R106	47KΩ	½	B84473	BTS-47K	
R107	5.1Ω	½	43X239		
R108	1Meg	1	C85105		
R109	330Ω	10	43X273	13/4A-350	
R110	2000Ω	15	43X277	2D-2000	
R111	10KΩ	5	43X272	13/4A-10K	
R112	270KΩ	½	B85274	BTS-270K	
R113	100KΩ	2	D85104	BTS-100K	Note 6

Note 1. Some Models may use a 3.9Meg resistor in this application.
Note 2. Some Models may use a 1.5Meg resistor in this application.
Note 3. Some Models may use a 1Meg resistor in this application.
Note 4. Some Models may use a 1500Ω resistor in this application.
Note 5. Some Models may use a 15KΩ resistor in this application.
Note 6. Not used in all Models.
* Items R63A, R63B, C54A, C54B, C54C are combined in one unit.
† Items R74A, R74B, R74C, C59A, C59B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC	635VCT	5VAC	6.3VAC	53X324	P-8166 ①②		TP319 ①	R-39BC	
	② 1.8A	.220VDC	③ 3A	② 1.2A						
				SEC. 4						
				6.3VAC						
				② 8.1A						

① Drill new mounting holes.
② Parallel the two 6.3V 5A windings for Sec. #4.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	190Ω	100Ω	54X9	A-8125	A-3003	TSO-5	A-97X	208T2 ⑦	Vert. osc. trans.
T3	469Ω Tap@ 5Ω	53X330 @.5Ω, 7Ω, SEC #2 14Ω, 23Ω, 29Ω 39Ω							Horiz. output trans.
T4	1500Ω Tap@ 4.4Ω	51X158	A-8123 ①	A-3037 ①	TSO-R7@	A-102X ①	222T1 ①		Vert. output trans.
T5A	23Ω		9A2274	DY-9A	MDF-70 ⑥	TT-3	Y-17	21ID2	Horiz. Deflection Coils
B	47Ω								Vert. Deflection Coils
T6	15Ω		9A2282				WC-12 ③	213R1	Horiz. Lin., Coil
T7	.8Ω		9A2183	WC-4 ④	MWC-2 ④ ⑤	TW-2 ④		201R4 ④	With Coil

① Drill one new mounting holes.
② Connect as auto trans.
③ Connect to coded blue & red dot terminals.
④ Bend clip or use original slider and core
⑤ Enlarge mounting hole.
⑥ Use original horizontal deflection coil network if necessary.
⑦ Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	5.5KΩ	3.7Ω	474Ω	1Ω	51X150	A-3823 ①	A-2030	RO-9 ①	S-3X	

① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3.7Ω	12A504	ST-108 Mod. P6-X	6A1	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ^)	REPLACEMENT DATA AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.230ADC	48.5Ω	1.63 Hy.	52X90	C-2326	C-2991	TH-1733 ①	C-17X ①

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	MILLER PART No.	MEISSNER PART No.	NOTES
L2A	Ant. Coil	0Ω CT	0Ω	9A2278-1			Channel 2
B	Ant. Coil	0Ω CT	0Ω	9A2278-2			Channel 3
C	Ant. Coil	0Ω CT	0Ω	9A2278-3			Channel 4
D	Ant. Coil	0Ω CT	0Ω	9A2278-4			Channel 5
E	Ant. Coil	0Ω CT	0Ω	9A2278-5			Channel 6
F	Ant. Coil	0Ω CT	0Ω	9A2278-6			Channel 7
G	Ant. Coil	0Ω CT	0Ω	9A2278-7			Channel 8
H	Ant. Coil	0Ω CT	0Ω	9A2278-8			Channel 9
I	Ant. Coil	0Ω CT	0Ω	9A2278-9			Channel 10
J	Ant. Coil	0Ω CT	0Ω	9A2278-10			Channel 11
K	Ant. Coil	0Ω CT	0Ω	9A2278-11			Channel 12
L	Ant. Coil	0Ω CT	0Ω	9A2278-12			Channel 13
L2	Fil. Choke	0Ω		34A-546			
L4	Neutr.Coil	0Ω		31B-298			
L5A	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-1			Channel 2
B	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-2			Channel 3
C	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-3			Channel 4
D	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-4			Channel 5
E	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-5			Channel 6
F	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-6			Channel 7
G	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-7			Channel 8
H	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-8			Channel 9
I	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-9			Channel 10
J	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-10			Channel 11
K	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-11			Channel 12
L	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-12			Channel 13
L6	Fil. Choke	0Ω		34A575			
L7	RF Choke	0Ω		31B-295			
L8	1st. Video IF	.8Ω		31A-078	6188 *	I7-1003	
L9	RF Choke	1.4Ω		31B-239			
L10	Fil. Choke	0Ω		9A2033	4602	19-3001	1 Microhenry
L11	2nd. Video IF	.3Ω	.3Ω	9A2230		I7-1063	
L12	Fil. Choke	0Ω		9A2033	4602	19-3001	1 Microhenry
L13	3rd. Video IF	.3Ω	.3Ω	9A2230		I7-1064	
L14	Fil. Choke	0Ω		9A2033	4602	19-3001	1 Microhenry
L15	RF Choke	2.6Ω		9A1979	4628	19-3036	36 Microhenries Includes Trap
L16	4th. Video IF	.2Ω		9A2226	6187		
L17	Series Peaking Coil	8Ω		36A10	6172	19-4060	60 Microhenries, wound on 22KΩ resistor
L18	Shunt Peaking Coil	25Ω		36A11	6174	19-3509	500 Microhenries
L19	4.5MC Trap	.2Ω		9A2074	1470	20-1004 †	
L20	Series Peaking Coil	2.6Ω		9A1979	6276	19-3036	36 Microhenries
L21	Shunt Peaking Coil	9Ω		36A16	6173 ▲	19-3075 ▲	80 Microhenries, wound on 1.5KΩ resistor
L22	Series Peaking Coil	12.5Ω		36A12	4644 †	19-4160	160 Microhenries, wound on 22KΩ resistor
L23	Shunt Peaking Coil	13.5Ω		36A2	6180	19-3180	190 Microhenries
L24	1st.Sound IF	3.7Ω		9A2168	1470A ■	17-1031 ▲	
L25	2nd.Sound IF	1.2Ω	1.2Ω	9A2170	6203		
L26	Ratio Det.	3.6Ω	.8Ω CT	9A2289	1468	I7-1033	Tertiary Winding - .1Ω
L27	Horiz. Osc.	53Ω		9A2096	6210	19-1576	

* Enlarge mounting hole.
† Parallel with 22KΩ resistor
▲ Parallel with 1.5KΩ resistor
‡ Remove original coil with 360MMF capacitor and use Meissner replacement with 47MMF capacitor.
■ Drill mounting hole.
Add 47MMF capacitor externally.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA AIRLINE PART No. FUSE	AIRLINE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG (Slo/Blo)	.4A④ 125V	16X147-3	16X146	313.400 (3AG 4/10A Slo/Blo)	357001	MDL 4/10	4405

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIRLINE PART No.	NOTES
M2	Bayonet	7.5	.3	White	7A32	Type #52

AIRLINE MODELS 25WG-3066A, B, C, -3071A, B, C, -3072A, B, C, -3073A, B, C, -3075A, B, C, -3077A, B, C, -3079A, B, C

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	RF Tuner	25A1095	
M4	Centering Magnet	2A419	
M5	Ion Trap Magnet	2A407	
	Safety Glass	17X170	Models 3066A, B, C, 3072A, B, C
	Safety Glass	17X173	Models 3071A, B, C, 3073A, B, C, Cabinet #261-1, 263-1
	Safety Glass	17X175	Models 3071A, B, C, 3073A, B, C, Cabinet #261, 263
	Mask	4X1194	Models 3066A, B, C, 3072A, B, C
	Mask	4X1196-1	Models 3071A, B, C, 3073A, B, C,
	Cabinet Back	S14X64	Models 3066A, B, C, 3072A, B, C
	Cabinet Back	S14X66	Models 3071A, B, C, 3073A, B, C
	Escutcheon Assy.	S4X28	Control Panel Models 3066A, B, C, 3071A, B, C
	Escutcheon Assy.	S4X28-2	Control Panel Models 3072A, B, C, 3073A, B, C
	Knob	10A820-1	Fine Tuning Models 3066A, B, C, 3071A, B, C
	Knob	10A821-1	Contrast Models 3066A, B, C, 3071A, B, C
	Knob	10A812	Channel Selector Models 3066A, B, C, 3071A, B, C
	Knob	10A779	Volume Models 3066A, B, C, 3071A, B, C
	Knob	10A820-2	Fine Tuning Models 3072A, B, C, 3073A, B, C
	Knob	10A821-3	Contrast Models 3072A, B, C, 3073A, B, C
	Knob	10A812-3	Channel Selector Models 3072A, B, C, 3073A, B, C
	Knob	10A812-4	Volume Models 3072A, B, C, 3073A, B, C
	Safety Glass	17X172	
	Mask	4X1195-3	Models 3075A, B, C, 3077A, B, C,
	Mask	4X1195-4	Models 3079A, B, C
	Escutcheon Assy.	S4X28-1	Control Panel Models 3079A, B, C, 3075A, B, C
	Escutcheon Assy.	S4X28-2	Control Panel Models 3077A, B, C
	Knob	10A820-1	Fine Tuning Models 3079A, B, C, 3975A, B, C
	Knob	10A821-1	Contrast Models 3079A, B, C, 3075A, B, C
	Knob	10A812	Channel-Selector Models 3079A, B, C, 3075A, B, C
	Knob	10A779	Volume Models 3079A, B, C, 3075A, B, C
	Knob	10A820-2	Fine Tuning Models 3077A, B, C
	Knob	10A821-3	Contrast Models 3077A, B, C
	Knob	10A812-3	Channel Selector Models 3077A, B, C
	Knob	10A812-4	Volume Models 3077A, B, C

TROUBLE SHOOTING AIDS (CONT.)

AUDIO

WEAK OR NO SOUND

Check by substitution V10, V11, V12, V13 and V14. Check circuit components. Check alignment of sound and video IF stages. Check setting of local oscillator.

BUZZ

Adjust ratio detector secondary for minimum buzz. Substitute V12. Check local oscillator setting. Check for overload at waveform at W1. If overload exists, check AGC network.

DISTORTED

Check audio stages using audio signal generator and scope.

If Undistorted	If Distorted
Check alignment of sound IF and ratio detector.	Substitute tube and check circuit components of stage where distortion occurs.

PROPERTY OF
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HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution, V18, V19, V20 and V21. Check waveform W16,

If Unsatisfactory	If Satisfactory
Check components of horizontal oscillator. Check coupling capacitor C80 for open.	Check components of horizontal output, damper and high voltage rectifier circuits, particularly T3 and T5A.

WEAK HIGH VOLTAGE

Check by substitution, V18, V19, V20 and V21. Follow procedure outlined under LOSS OF HIGH VOLTAGE.

BLOOMING

If substitution of V18, V19, V20, V21 and V22 does not correct the trouble, check R108. Follow procedure outlined under LOSS OF HIGH VOLTAGE.

POWER

SET DEAD

Check .4 ampere fuse located in high voltage cage. Substitute V22. Check filter components. Check B+ circuit for short.

SMALL RASTER AND WEAK SOUND

Follow procedure outlined under SET DEAD.

DIM PICTURE

Follow procedure outlined under LOSS OF HIGH VOLTAGE and SET DEAD. Check picture tube for low emission.

HAS RASTER BUT NO SOUND OR PICTURE

Check by substitution, V2, V3, V4, V5 and V6. Check associated components.

GENERAL

SNOWY PICTURE

Substitute V1 and video IF tubes and check alignment.

INTERMITTENT STREAKS

Check high voltage circuit for corona discharge and leakage.

COMPLETE LOSS OF SYNC

Substitute V7 and V15. Check associated components.

Symptoms shown above are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

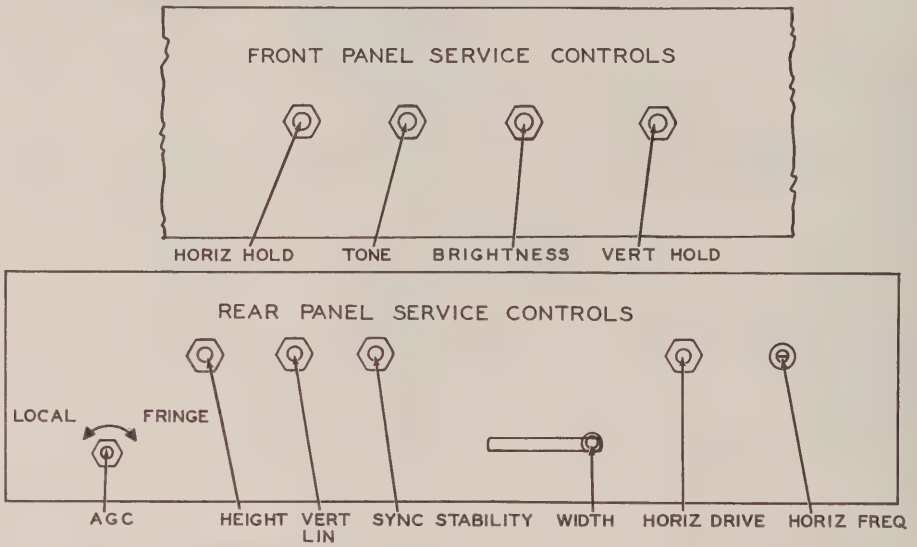
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 4 wood screws holding wood strip at top of cabinet. Remove wood strip and safety glass, hold safety glass during this operation. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS

AGC THRESHOLD CONTROL

Tune to strongest available TV station.

Adjust the AGC threshold control clockwise until buzzing or overloading of the picture occurs, then turn counter clockwise just enough to eliminate the buzz or overload.

SYNC STABILITY CONTROL

Turn sync control fully counter clockwise, then clockwise while watching the picture, until a minimum of bending occurs.

An incorrect setting may cause bending and tearing of the picture.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF detector buzz, adjust the ratio detector secondary (L26) located on top of chassis. (See tube placement chart).

FUSES

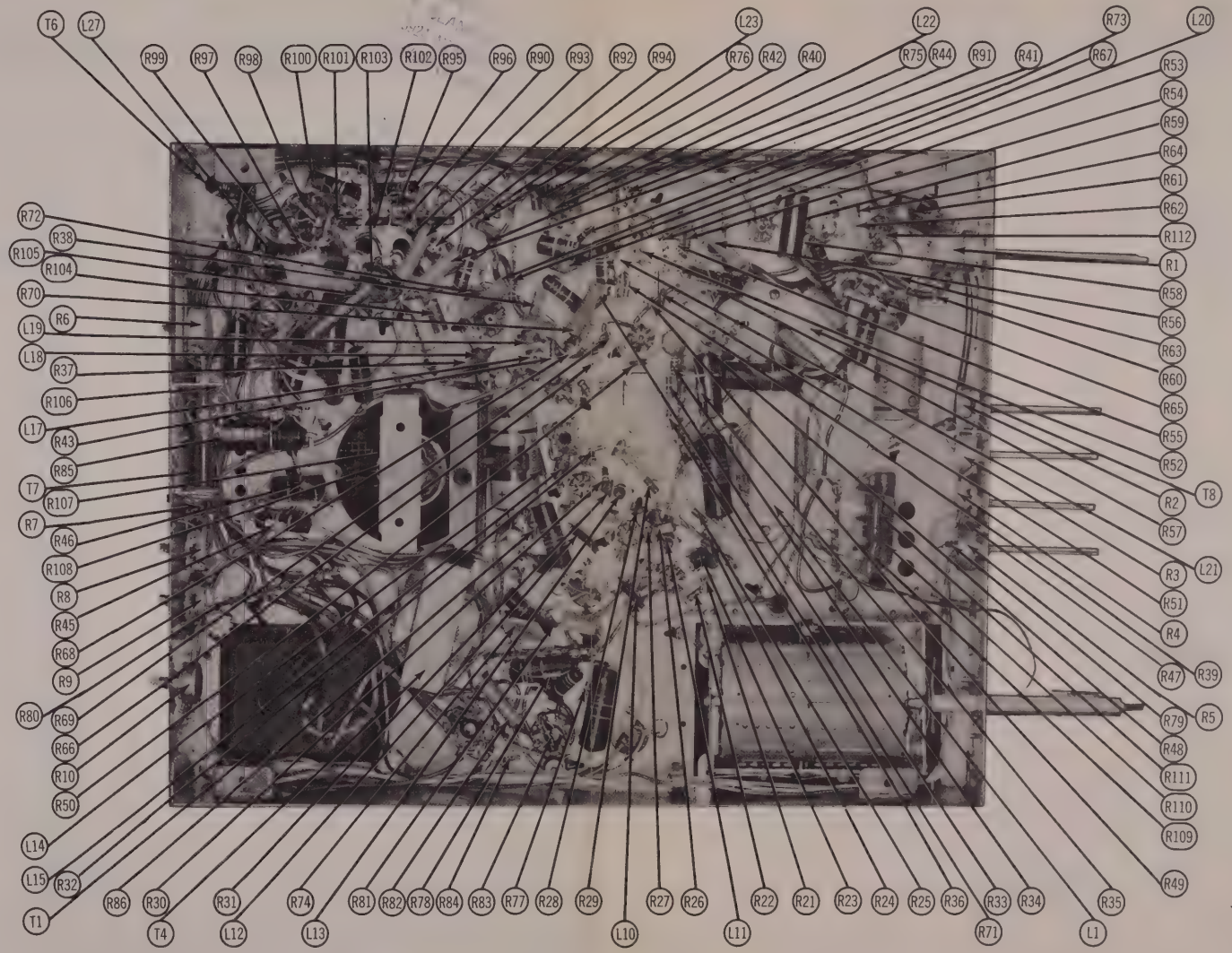
One fuse is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting a magnetic ring around the neck of picture tube located flush against the yoke. Turn the disk like knob and at the same time rotate the ring around the tube until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Removd 2 wood and 2 metal screws. Remove rear cover.
3. Disconnect built-in antenna. Loosen 2 wood screws. Remove antenna bracket.
4. Disconnect speaker. Remove 4 speaker nuts. Remove speaker. (Not necessary for chassis removal).
5. Remove 5 chassis bolts. Remove chassis .

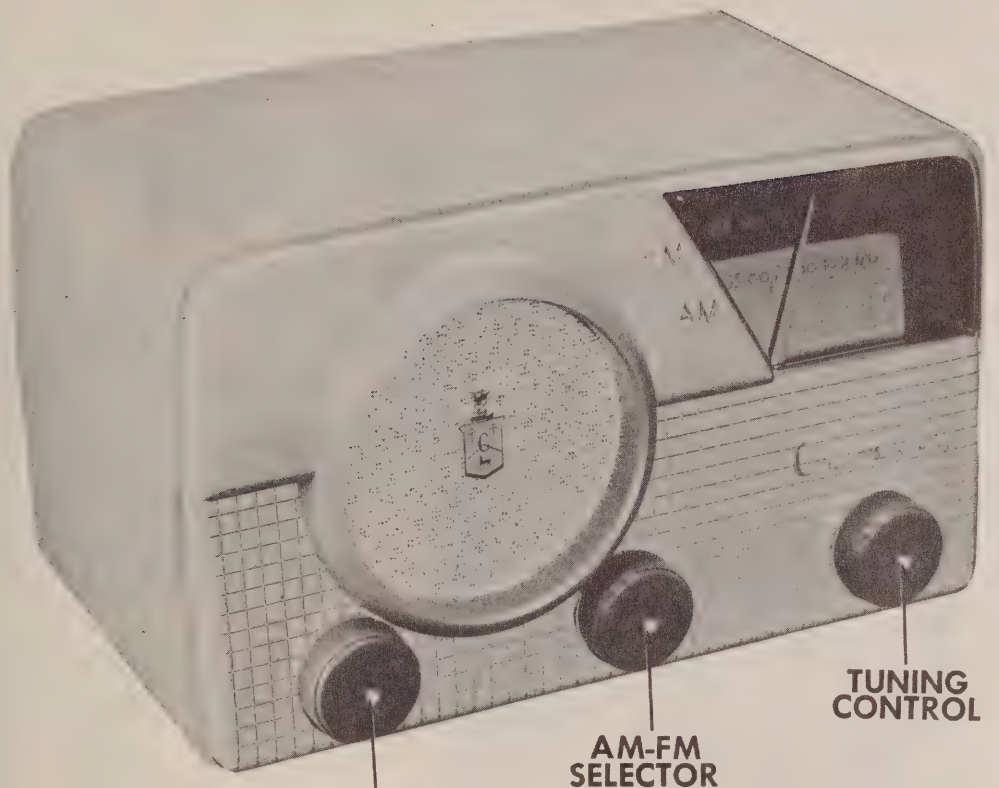


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

CROSLEY
MODELS E30BE, GN, MN, TN (Ch. 30E, 30E-1)

L. F. CLANCY
DENVER, COLORADO

CROSLEY
MODELS E30BE, GN, MN, TN (Ch. 30E, 30E-1)



CROSLEY
MODELS E30BE, GN, MN, TN (Ch. 30E, 30E-1)

TRADE NAME	Crosley Model E30BE, GN, MN, TN (Ch. 30E, 30E-1)	
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio	
TYPE SET	AC/DC Operated AM-FM Superheterodyne Receiver	
TUBES (Seven)	Types 12BA6 FM RF Amp., 12AT7 FM Conv., 12BE6 AM Conv., 12BA6 1st. FM-AM IF Amp., 12BA6 2nd. FM IF Amp., 19T8 FM Det.-AM Det.-AVC-AF Amp., 35C5 Audio Output	
POWER SUPPLY	105-125 Volts AC/DC	RATING .32 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC	FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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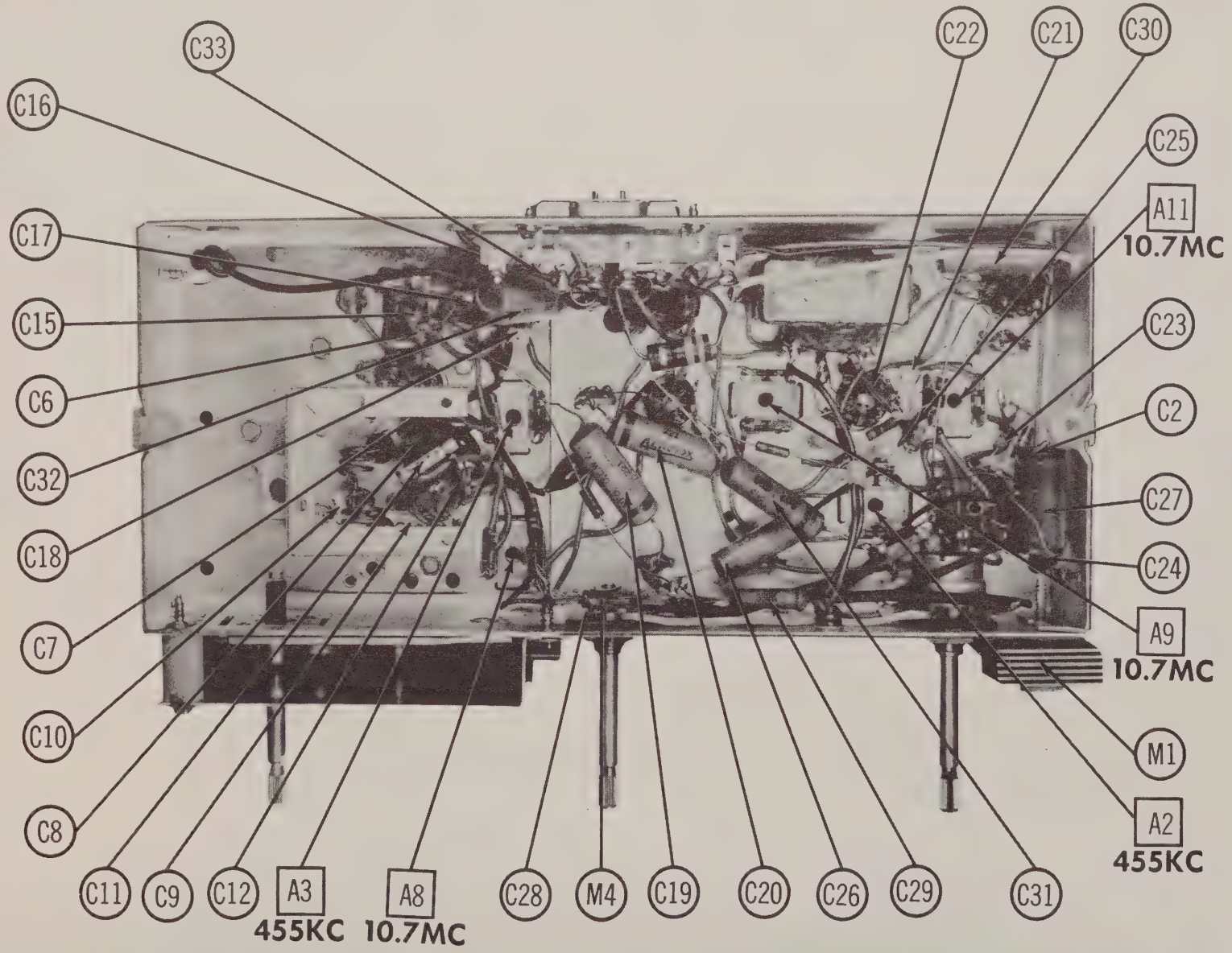


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Disconnect the short wire; with spade lug, from FM antenna terminal.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 1 (grid) of 12BA6 (V4). Low side to chassis.	455KC (400∿Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2,	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to pin 1 (grid) of 12BE6 (V3). Low side to chassis.	"	"	"	"	A3, A4	"
3.	200MMF	High side to external terminal. Low side to chassis.	1400KC	"	1400KC	"	A5, A6	Adjust in order given for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓐ to B-. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Direct	High side to stator of middle section of tuning gang. Low side to chassis.	10.7MC (Unmod.)	FM	Tuning gang fully closed.	DC probe to point Ⓐ. Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection. Attenuate generator output to maintain not more than 5 Volts at VTVM.
5.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A12	Adjust for a zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to stator of middle section of tuning gang. Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully closed.	Vert. Amp. to point Ⓐ. Low side to chassis.	A7, A8, A9, A10, A11	Disconnect stabilizer capacitor C2. Adjust for curve of maximum amplitude and symmetry as in Fig. 1.
5.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A12	Reconnect capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Two 39Ω Carbon Resistors	Across FM antenna terminals with 39Ω in each lead.	98MC	FM	98MC	DC probe to point Ⓐ. Common to chassis.	L5	Compress or expand L5 for maximum deflection.
7.	"	"	104MC	"	104MC	"	A13	Adjust for maximum deflection while rocking tuning gang.
8.	"	"	92MC	"	92MC	"	L4	Compress or expand L4 for maximum deflection.

FIG. 1

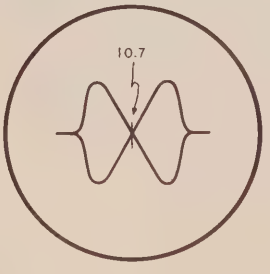
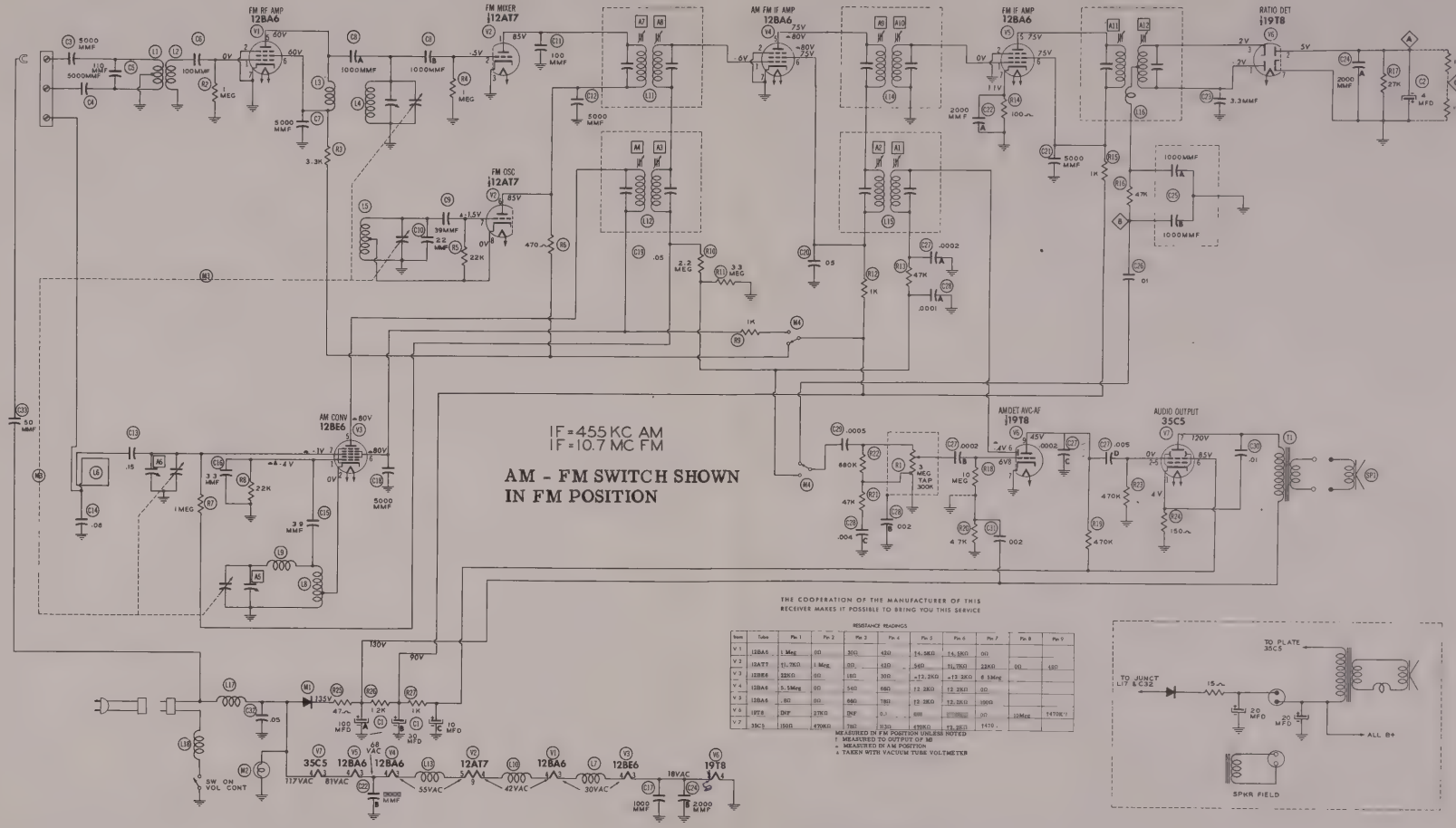


FIG. 2



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	1 Meg	0Ω	300Ω	420	14.5KΩ	14.5KΩ	0Ω		
V 2	12AT7	11.7KΩ	1 Meg	0Ω	620	540	11.7KΩ	22KΩ	0Ω	68Ω
V 3	12BE6	22KΩ	0Ω	180	300	±12.2KΩ	±12.2KΩ	6.5Meg		
V 4	12BA6	0.5Meg	0Ω	540	680	12.2KΩ	12.2KΩ	0Ω		
V 5	12BA6	8Ω	0Ω	680	780	12.2KΩ	12.2KΩ	350Ω		
V 6	19T8	INF	270Ω	INF	0.2	600	0Ω	0Ω	22Meg	1470K*
V 7	35C5	150Ω	470KΩ	780	930	175KΩ	13.2KΩ	1470		

MEASURED IN FM POSITION UNLESS NOTED
* MEASURED TO OUTPUT OF M3
+ MEASURED IN AM POSITION
4 TAKEN WITH VACUUM TUBE VOLTMETER

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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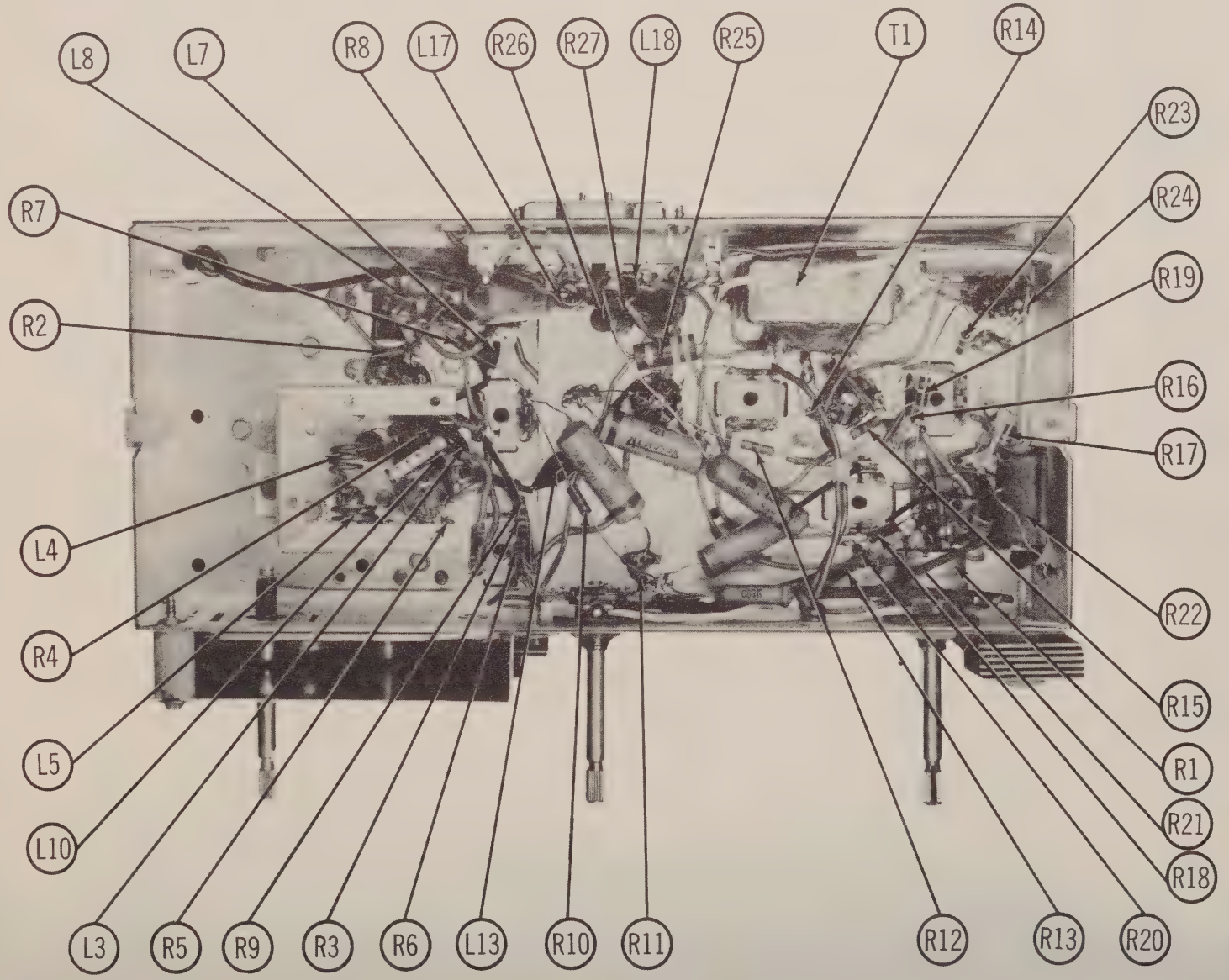
206-3



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	FM RF Amplifier	12BA6	12BA6	7BK	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	12BE6	12BE6	7CH	
V4	1st FM AM IF Amp.	12BA6	12BA6	7BK	
V5	2nd FM IF Amp.	12BA6	12BA6	7BK	
V6	FM Detector-AM Detector-AVC-AF Amp.	19T8	19T8	9E	
V7	Audio output	35C5	35C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

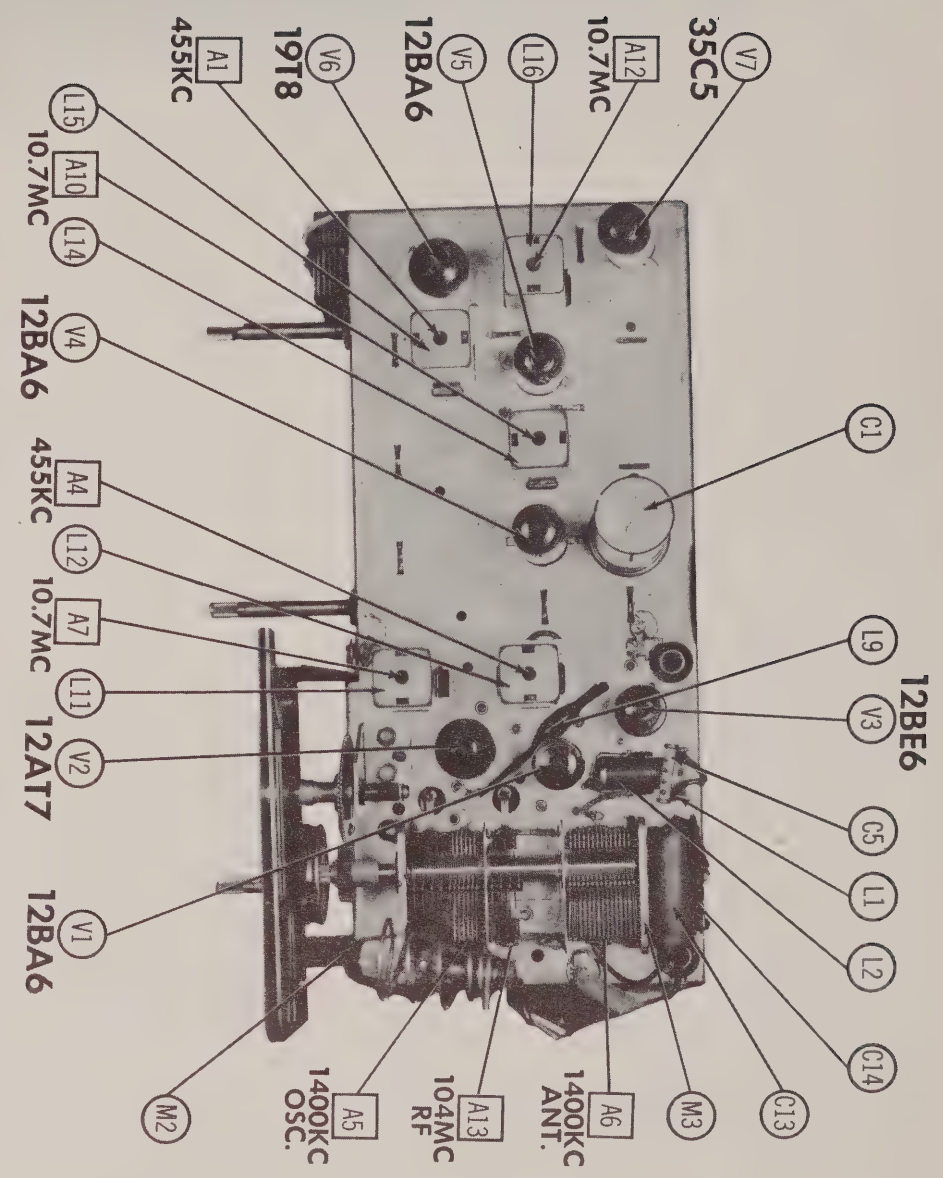
ITEM No.	RATING CAP.	RATING VOLT	CROSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■100	150	B-149183	AFH3-13		C010			R1307	Note 1
B	▲30	150				BR1015				Note 1
C	10	150								Note 1
C2	4	50	B-142958	PRS150/4		BR550		TC30	TVA-1303	
C3	5000		C-137727-121	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C4	5000		C-137727-121	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C5	110		W-145913-2							
C6	100		C-137727-1	SI100N750	TCN-100		N750L-101	NT-531	5TCU-T1	
C7	5000		C-144675-2	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C8A	1000		C-144675-7	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C9	39		C-137727-109				N330K-390			
C10	22		C-137727-98	SI22N080						
C11	100		C-137727-90							
C12	5000		C-137727-121	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C13	.15	200	39001-20	P288-15		PTE4P15		TP417	2TM-P15	
C14	.08	200	39001-85							
C15	39		C-137727-109				N330K-390			
C16	3.3		W-137398-5	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C17	1000		C-144675-14	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C18	5000		C-137727-121	SI5000	D6-502	TM5D5	GP2-333-502	UC-525	5HK-D5	
C19	.05	200	39001-17	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C20	.05	200	39001-17	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C21	5000		C-137727-121	SI5000	D6-502	TM5D5	GP2-333-502	UC-525	5HK-D5	
C22A	2000			BPD-2X002	DD-2-202	TM5DD2	812-002	DCD-522	5HK-2D2	Note 2
B	2000									Note 2
C23	3.3		C-137398-5	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C24A	2000			BPD-2X002	DD-2-202	TM5DD2	812-002	DCD-522	5HK-2D2	Note 2
B	2000									Note 2
C25A	1000		C-144675-12	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C26	.01	200	39001-13	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C27A	.0002			SI200	D6-201	5W5T2	GP2K-201	UC-532		
B	.002		C-144675-1	BPD-002	DD-202	TM5D2	801-001	DC-525	34C5	
C	.0002			SI200	D6-201	5W5T2	GP2K-201	UC-53		
D	.005			BPD-005	DD-502	TM5D5	811-005	DC-525		
C28A	.0001			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
B	.004		C-144675-18	BPD-004	D6-402	TM5D4	GP2-333-402	UC-524	5HK-D4	
C	.004			BPD-004	D6-402	TM5D4	GP2-333-402	UC-524	5HK-D4	
C29	.0005		†C-142951-12	SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	Note 4
C30	.01	600	39001-13	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C31	.002	600	39001-74	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	Note 3
C32	.05	200	39001-17	P288-05		PJ2S5		PT415	2TM-S5	
C33	50		B-143686-1	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	

Note 1. Ch. 30E-1 replaces C1 with dual 20MFD unit. (part #B-151670).
Note 2. Some Models use dual 1000MMF in this application (part #C-144675-7)
Note 3. Used only with Models having PM speaker.
Note 4. Items C29 and R22 are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3 Meg.	½	B149184		AT-128			Volume-Trapped@300KΩ
B	Shaft		Not Req.		KSS-3			Attach to R1A.
C	Switch		Not Req.		SW-A			Attach to R1A.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA CROSLEY PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	1 Meg.	1/2	39373-92	BTS-1 Meg.	
R3	3300Ω	1/2	39373-44	BTS-3300	
R4	1 Meg.	1/2	39373-92	BTS-1 Meg.	
R5	22KΩ	1/2	39374-41	BTS-22K	
R6	470Ω	1/2	39373-26	BTS-470	
R7	1 Meg.	1/2	39373-92	BTS-1 Meg.	
R8	22KΩ	1/2	39373-60	BTS-22K	
R9	1000Ω	1/2	39373-33	BTS-1000	
R10	2.2 Meg.	1/2	39373-97	BTS-2.2 Meg	
R11	3.3 Meg.	1/2	39373-100	BTS-3.3Meg	
R12	1000Ω	1/2	39373-33	BTS-1000	
R13	47KΩ	1/2	39373-67	BTS-47K	
R14	100Ω	1/2	39373-14	BTS-100	
R15	1000Ω	1/2	39373-33	BTS-1000	
R16	47KΩ	1/2	39373-67	BTS-47K	
R17	27KΩ	1/2	39374-42	BTS-27K	
R18	10 Meg.	1/2	39373-107	BTS-10 Meg.	
R19	470KΩ	1/2	39373-87	BTS-470K	
R20	4700Ω	1/2	39374-33	BTS-4700	Note 1.
R21	47KΩ	1/2	39373-67	BTS-47K	
R22	680KΩ	1/2	† C-142951-12	BTS-680K	
R23	470KΩ	1/2	39373-87	BTS-470K	
R24	150Ω	1/2	39374-15	BTS-150	
R25	47Ω	2	39374-185		Note 2.
R26	1200Ω	2	39374-202	BTB-1200	
R27	1000Ω	1/2	39374-25	BTS-1000	

Note 1. Used only with models having PM speaker.
Note 2. Chassis 30E-1 uses a 15Ω resistor in this application.
† Items R22 and C29 are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.8KΩ	3.9Ω	370Ω	.8Ω	B-147171	A-3876	A-2928	RO-302	S-1X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5 1/4"	PM	3.9Ω	145956-1	ST-803 Mod. P525-V	52A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CROSLEY PART No.	MILLER PART No.	MEISSNER PART No.	NOTES
L1	FM Ant. Coil Primary	0Ω		B-143322			Tapped
L2	FM Ant. Coil Secondary	0Ω		AW-145724			
L3	FM RF Choke	1.4Ω		AC-143837	4612		9 Microhenries
L4	FM RF Coil	0Ω		AA-151747			
L5	FM Osc. Coil	0Ω		AA-151746			Tapped
L6	AM Loop Ant.	2.9Ω		AC-152873			Includes cabinet back & power cable assembly
L7	Fil. Choke	.2Ω		AW-149187	4606		2.3 Microhenries
L8	AM Osc. Coil	9.5Ω		AC-152448	71-Osc. *		Tapped @ 1.4Ω
L9	Osc. Tracking Coil	1.4Ω		AC-143837	4612		9 Microhenries
L10	Fil. Choke	.2Ω		AW-149187	4606		2.3 Microhenries
L11	1st. FM IF	.4Ω	.6Ω	D-145025-3	1463	16-3487	
L12	1st. AM IF	15Ω	16Ω	AC-139919-3	12-C1	16-6758	
L13	Fil. Choke	.2Ω		AW-149187	4606		2.3 Microhenries
L14	2nd. FM IF	.8Ω	.8Ω	D-145025-1	1463	16-3487	
L15	2nd. AM IF	15Ω	16Ω	AC-139919-3	12-C2	16-6758	
L16	Ratio Det.	1.8Ω	1Ω CT	C-145193-1	1465		Tertiary Winding -.4Ω
L17	AC Line Choke	0Ω		AW-143934	4604		1.48 Microhenries
L18	AC Line Choke	0Ω		AW-143934	4604		1.48 Microhenries

* Drill mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA CROSLEY PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.064A	B-145370	NC5	5M1	1004A	6S100	100

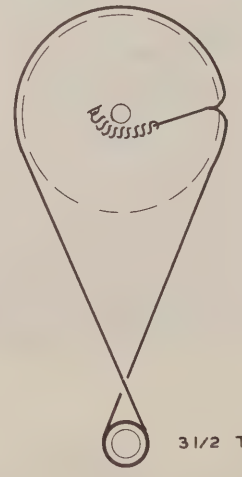
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA CROSLEY PART No.		NOTES
M2	Candelabra	115-125V	7 Watt		W-145851		Type C7

MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M3	Tuning Selector	C-152824	23-482MMF, 14-125MMF
M4	Band Selector	W-145300-2	
	Cabinet	AC-152861-4	E30BE (Blue)
	Cabinet	AC-152861-3	E30GN (Green)
	Cabinet	AC-152861-2	E30MN (Maroon)
	Cabinet	AC-152861-1	E30TN (Tan)
	Dial	C-152832-4	E30BE
	Dial	C-152832-3	E30BN
	Dial	C-152832-2	E30MN
	Dial	C-152832-1	E30TN
	Knob	B-149065-4	E30TN
	Knob	B-149065-3	E30GN
	Knob	B-149065-2	E30MN
	Knob	B-149065-1	E30BE
	Pointer Dial	A-152814	
	Back	AC-152873	Includes loop ant., and power cable assy.



DIAL CORD DRIVE

PHOTOFACT* Folder

*TRADE MARK

EMERSON MODELS 711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 120169B, D, F)

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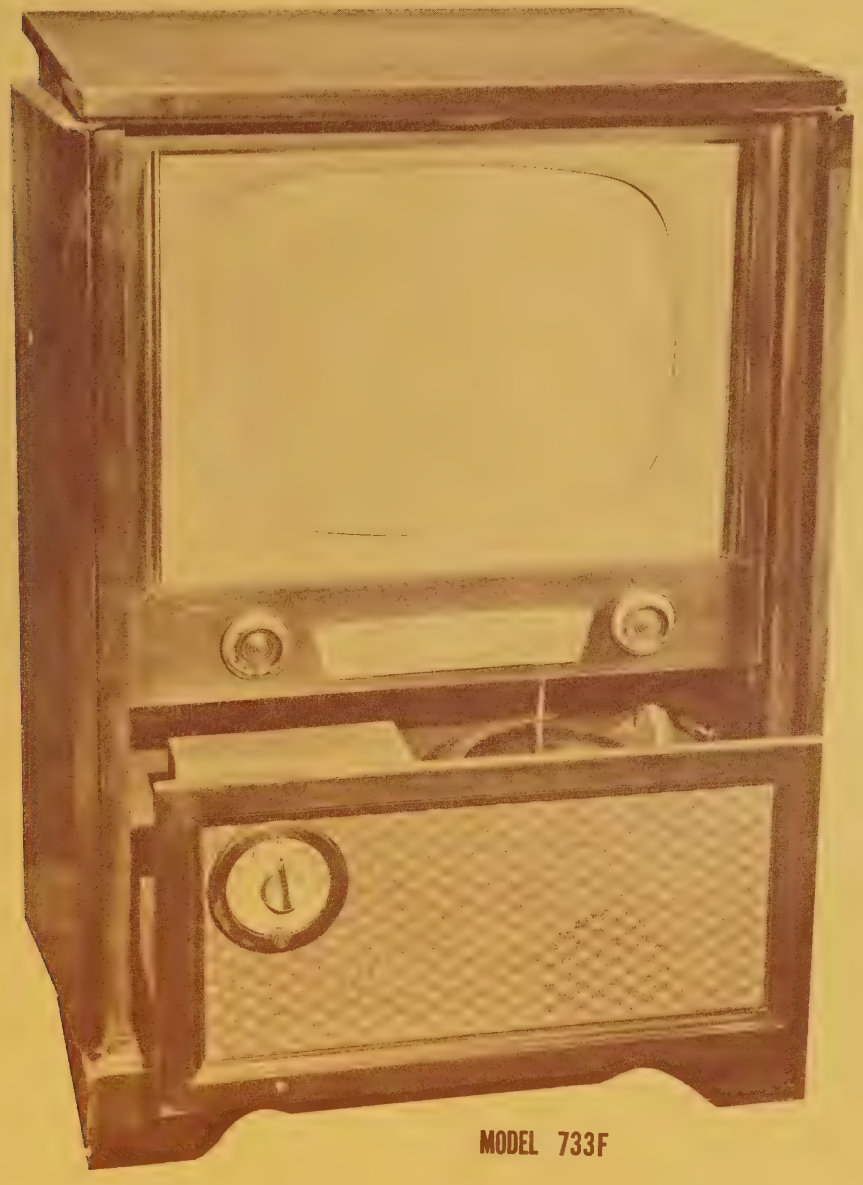

MODEL 733F

EMERSON MODELS 711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 120169B, D, F)

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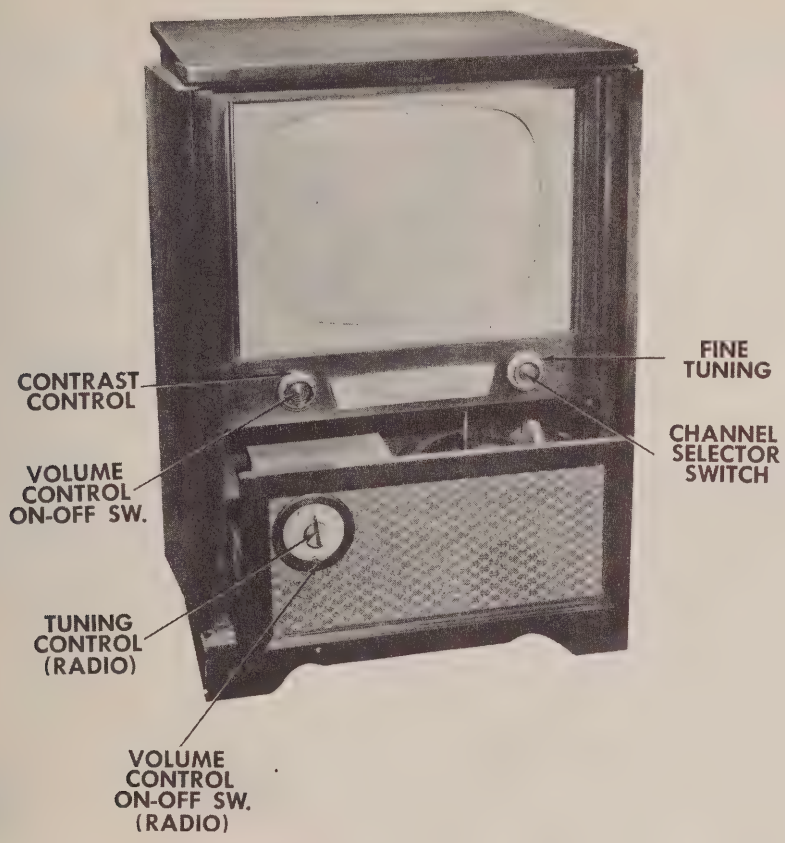
DATE 6-53 SET 206 FOLDER 4

PHOTOFACT* Folder
*TRADE MARK

EMERSON MODELS 711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 120169B, D, F)



EMERSON MODEL 733F

TRADE NAME	Emerson Models 732B, 734B, 742B, 720D, 711F, 712F (Ch.120169-B) 720F(Ch.120169-D)733F(Ch.120169-F) (TV) 120152-F (Radio).
MANUFACTURER	Emerson Radio & Phono Corp., 111 8th. Ave., New York, N.Y.
TYPE SET	TV-AM Radio-Phono Combination Receiver
TUBES	Twenty-Nine
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING TV-1.75 Amp@ 117 Volts AC-Radio-.25 Amp @ 117 Volts AC
TUNING RANGE—	TV Channels 2 thru 13 Video IF 45.75MC, TV Sound 41.25MC (Intercarrier)Radio-540-1620KC,AM IF 455KC

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 23
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions (Radio) 18
Parts List and Descriptions (TV) 15, 16, 17
Photographs
- Cabinet-Rear View 11
- Capacitor and Alignment Identification 4, 9
- Chassis -Bottom View (Radio) 14
- Chassis -Top View (Radio) 14
- Chassis - Top View (TV) 3
- RF Tuner 10
- Resistor and Inductor Identification 13, 20

Resistance Measurements 8
Servicing in the Field 22
Schematic (Radio) 19
Schematic (TV) 2
Trouble Shooting Aids 12, 21
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

FOR SERVICE INFORMATION ON RECORD CHANGER, SEE V-M MODEL 950, PHOTOFACT SET 107, FOLDER 13, ALSO, SUPPLEMENT SET 131 FOLDER 17, OR RECORD CHANGER MANUAL CM-3.

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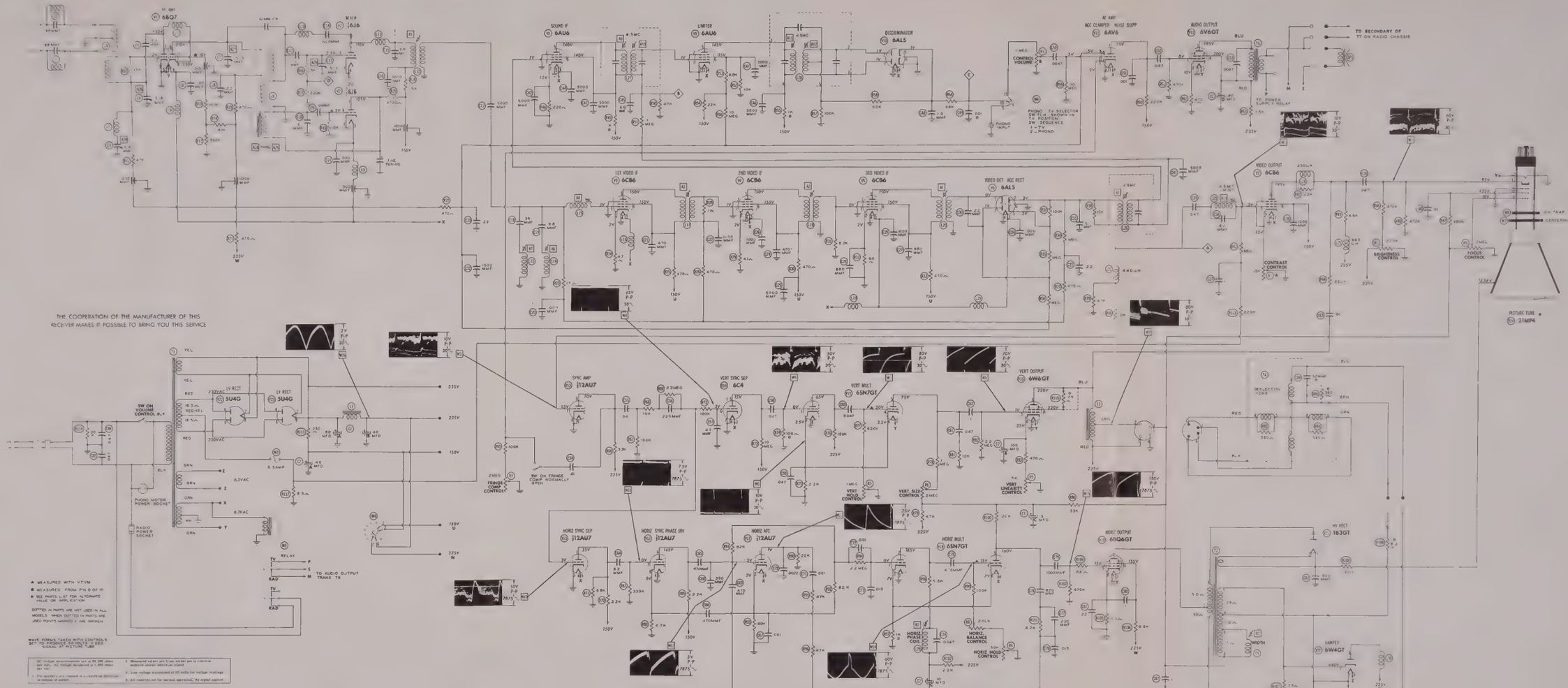
DATE 6-53 SET 206 FOLDER 4

EMERSON MODELS 711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 120169B, D, F)



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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EMERSON MODELS 711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 1201698, D, F)

EMERSON MODELS 711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 1201698, D, F)

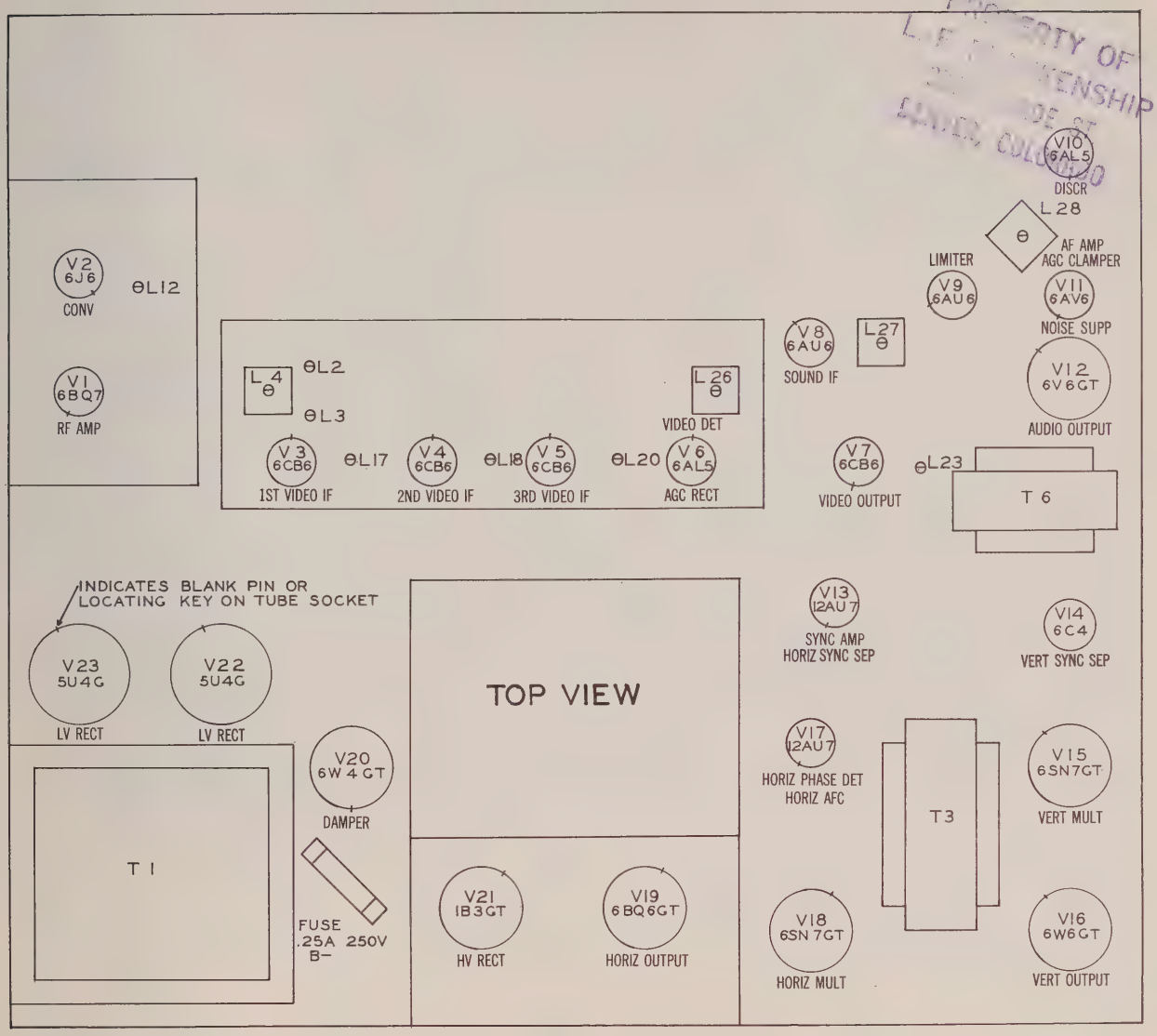
T V CHASSIS TOP VIEW

PROPERTY OF
LAKEWOOD SHIP
DENVER, COLORADO

EMERSON MODELS 711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 120169B, D, F)

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V22, V23 Fuse (M3)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V24
Has pic, no sound-V8, V9, V10, V11, V12
Overloaded picture-V11

SYNC FAILURE
No vert. sync.-V14, V15
No horiz. sync-V13, V17, V18
No vert. or horiz. sync.-V13

SWEEP FAILURE
No raster, has sound-V18, V19, V20, V21, V24
No vertical deflection-V15, V16
Poor vert. linearity or foldover-V15, V16
Poor horiz. linearity or foldover-V18, V19, V20
Narrow picture-V18, V19, V20, V21, V22, V23
Vert. off freq.-V14, V15
Horiz. off freq.-V13, V17, V18

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube (V18) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C23. Connect the positive lead to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	Not Used.	45.75MC (unmod)	Any	Use VTVM. DC probe to point (A) Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator output for not more that 2 Volts at VTVM.
2.	"	"	"	43.2MC	"	"	A2	"
3.	"	"	"	42.0MC	"	"	A3	"
4.	"	"	"	45.0MC	"	"	A4, A5	"
5.	"	"	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.
6.	"	"	"	47.25MC (400∿ Mod)	"	Vert. amp to point (A) Low side to chassis.	A7	Use high scope gain and generator output. Adjust A7 for MINIMUM 400∿ response on scope.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC 47.25MC	Any	Vert. amp to point (A) Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A1 thru A5 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Short pin 1 (grid) of 6CB6 (V5) to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to pin 7 (plate) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru 10KΩ to point (B) Common to chassis.	A8, A9, A10	Adjust for maximum deflection. Attenaute generator to maintain about 1 Volt above noise voltage at VTVM.
9.	"	"	"	"	DC probe to point (C) Common to chassis.	A11, A12	Detune A12 for maximum negative deflection. Adjust A11 for maximum deflection. Readjust A12 for zero reading on VTVM. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Short pin 1 (grid) of 6CB6 (V5) to chassis.
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to pin 7 (plate) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp thru 10KΩ to point (B) Low side to chassis.	A8, A9, A10	Adjust for curve of maximum height and symmetry as in Fig. 2.
9.	"	"	"	"	"	Vert. amp to point (C) Low side to chassis.	A11, A12	Adjust A11 for maximum amplitude and straightness of crossover lines as in Fig. 3. Adjust A12 so that 4.5MC occurs at center of crossover lines. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Short pin 1 (grid) of 6CB6 (V5) to chassis.
Set contrast control to minimum contrast position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.01MFD	High side to pin 2 (cathode) of 6CB6 (V7). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A13	Adjust for MINIMUM deflection. If A13 is adjusted check adjustment of A8 as in step 8.

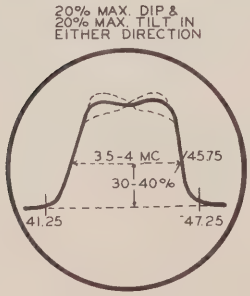


FIG. 1

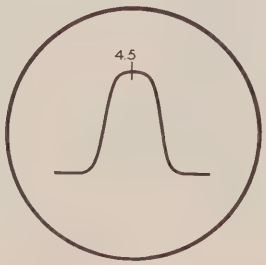


FIG. 2

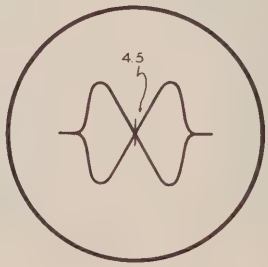


FIG. 3

TV ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the bias battery as under Video IF Alignment. Also, connect a jumper from the negative lead to the ungrounded side of C33.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point (A) Low side to chassis.	A14	Advance the scope gain so that the sound trap notch is visible on response curve. Adjust to place sound marker in trap notch. Video marker should fall at 30 to 40% response on opposite slope of response curve as in Fig. 4.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A25	

RF AND MIXER ALIGNMENT

Connect bias battery as under Oscillator Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usally 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10KΩ to point (D) Low side to chassis.	A26, A27 A28	Adjust for maximum response similar to Fig. 5.
13.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check fore response similar to Fig. 5. If markers fall below 70% aon any channel make compromise adjustments of A26, A27 and A28 with channel switch set to that channel then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

IF TRAP ADJUSTMENT

The IF trap adjustment, A29, is for the purpose of eliminating any IF interference from nearby transmitters operating in the 40MC band.
If interference is noted, turn to channel 2 and adjust A29 to minimize it.

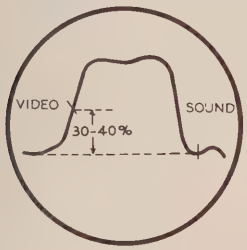


FIG. 4

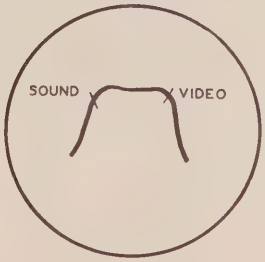


FIG. 5

RADIO ALIGNMENT INSTRUCTIONS

RADIO ALIGNMENT

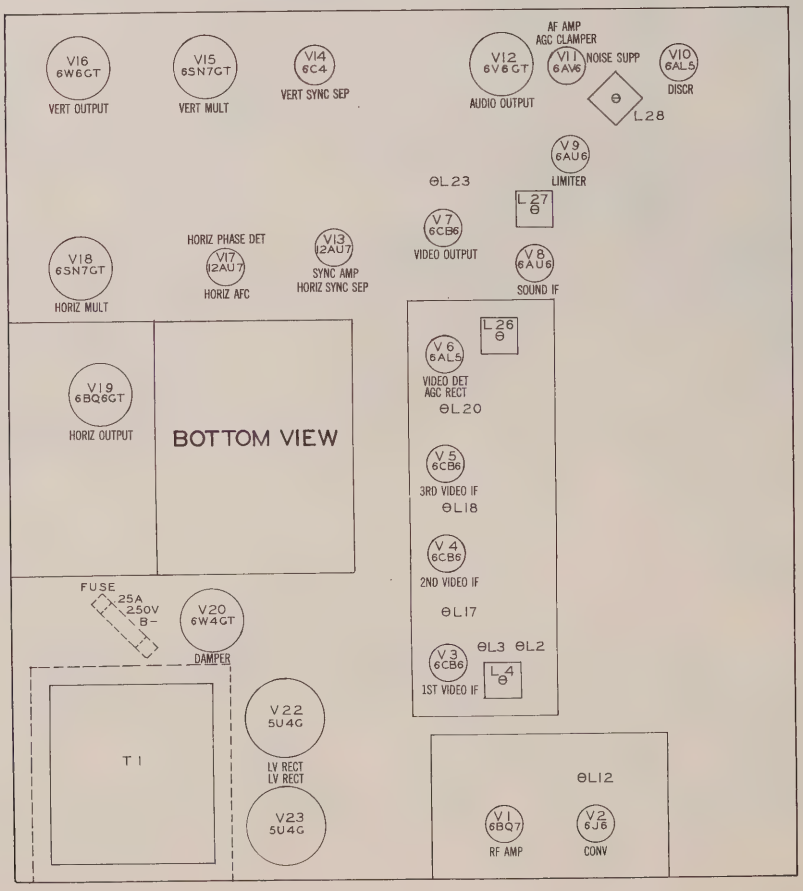
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
14.	.1MFD	High side to pin 7 (grid) of 12BE6 (V25). Low side to B-.	455KC (400∿Mod)	Radio	Tuning gang fully open.	Across voice coil.	A30, A31, A32, A33	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
15.		Loop	1620KC	"	"	"	A34	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
16		"	1400KC	"	Tune to 1400KC signal.	"	A35	"

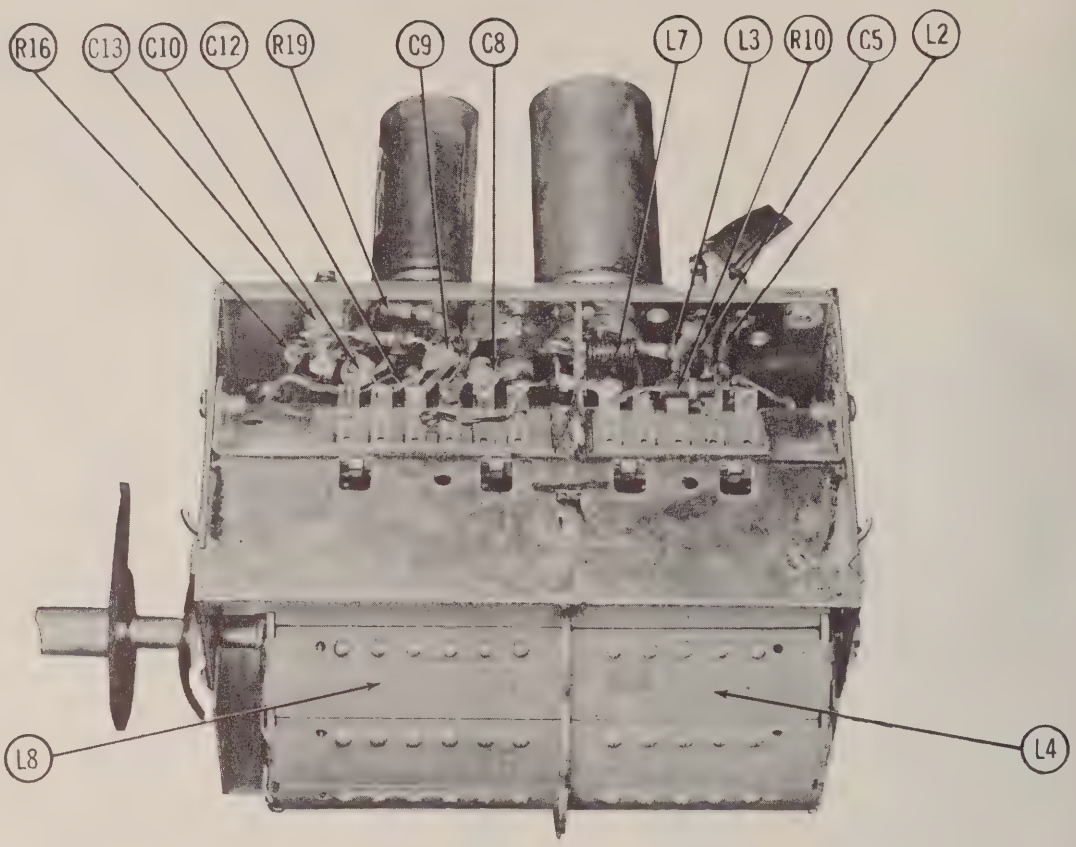
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	2 Meg	0Ω	.1Ω	0Ω	†940Ω	200KΩ	INF	0Ω
V 2	6J6	†6KΩ	†16KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	1 Meg	47Ω	.1Ω	0Ω	†1.6KΩ	†1.6KΩ	0Ω		
V 4	6CB6	1 Meg	47Ω	.1Ω	0Ω	†1.6KΩ	†1.6KΩ	0Ω		
V 5	6CB6	5Ω	180Ω	.1Ω	0Ω	†1.6KΩ	†1.6KΩ	0Ω		
V 6	6AL5	.5Ω	1 Meg	.1Ω	0Ω	100KΩ	0Ω	4.7KΩ		
V 7	6CB6	1.2Meg	200Ω	.1Ω	0Ω	†8KΩ	†1.2KΩ	200Ω		
V 8	6AU6	1 Meg	0Ω	0Ω	.1Ω	†2.4KΩ	†2.4KΩ	220Ω		
V 9	6AU6	47KΩ	0Ω	0Ω	.1Ω	†2.4KΩ	8KΩ	0Ω		
V 10	6AL5	0Ω	100KΩ	0Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 11	6AV6	10Meg	0Ω	0Ω	.1Ω	470KΩ	2.2Meg	†220KΩ		
V 12	6V6GT	INF	.1Ω	†1.6KΩ	†1.5KΩ	470KΩ	45Ω	0Ω	470Ω	
V 13	12AU7	5.6KΩ	2.3Meg	0Ω	.1Ω	.1Ω	†33KΩ	16KΩ	0Ω	0Ω
V 14	6C4	†10Meg	INF	.1Ω	0Ω	†10Meg	2.4Meg	0Ω		
V 15	6SN7GT	100Ω	†150KΩ	2.2KΩ	1.4Meg	†2.4Meg	2.2KΩ	.1Ω	0Ω	
V 16	6W6GT	INF	0Ω	†375Ω	†375Ω	2.2Meg	60KΩ	.1Ω	1.5KΩ	
V 17	12AU7	22KΩ	265KΩ	100KΩ	0Ω	0Ω	†3.4KΩ	330KΩ	4.7KΩ	.1Ω
V 18	6SN7GT	2.4Meg	8KΩ	1KΩ	340KΩ	170KΩ	1KΩ	0Ω	.1Ω	
V 19	6BQ6GT	INF	0Ω	INF	6.8KΩ	470KΩ	INF	.1Ω	100Ω	Top Cap ♦63Ω
V 20	6W4GT	INF	INF	90KΩ	INF	†90Ω	INF	♦26Ω	♦26Ω	
V 21	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ♦573Ω
V 22	5U4G	INF	18KΩ	INF	25Ω	INF	25Ω	INF	18KΩ	
V 23	5U4G	INF	18KΩ	INF	25Ω	INF	25Ω	INF	18KΩ	
V 24	21MP4	0Ω	0Ω	Pin 6 300KΩ	Pin 10 900KΩ	Pin 11 240KΩ	Pin 12 .1Ω			

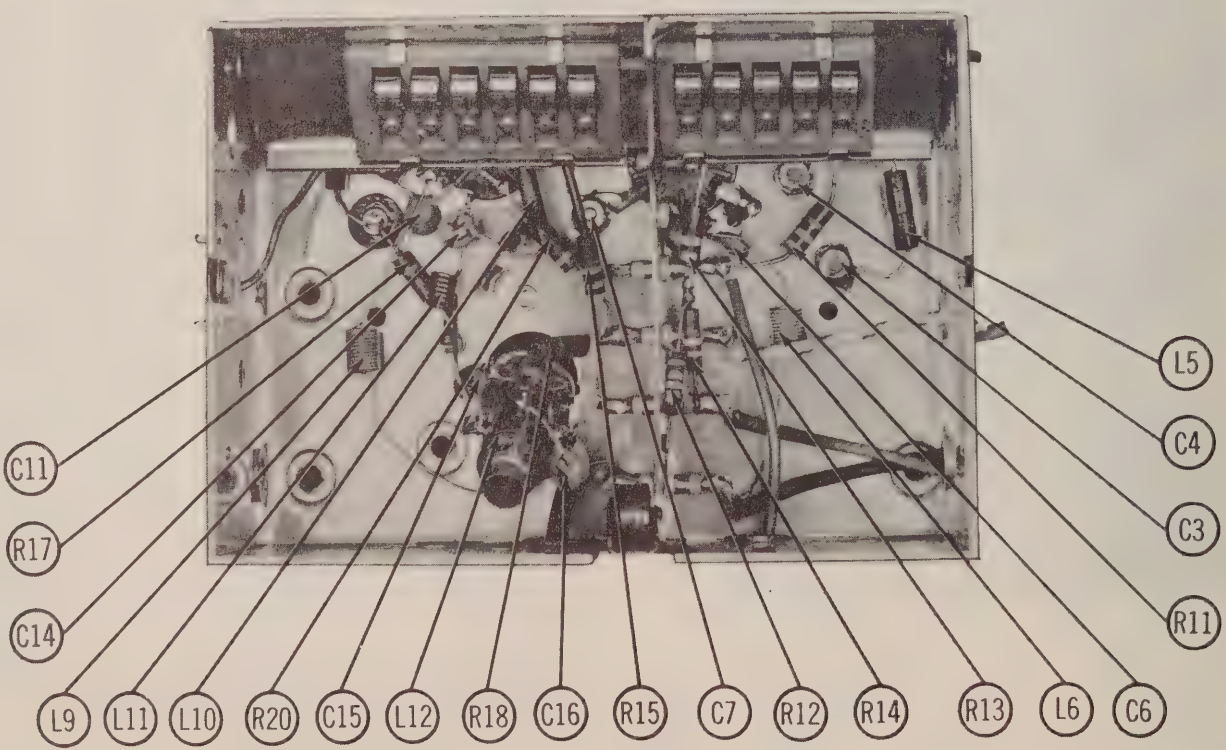
ALL MEASUREMENTS IN TV POSITION.
† MEASURED FROM PIN 8 OF V23.
♦ MEASURED FROM PIN 3 OF V20.



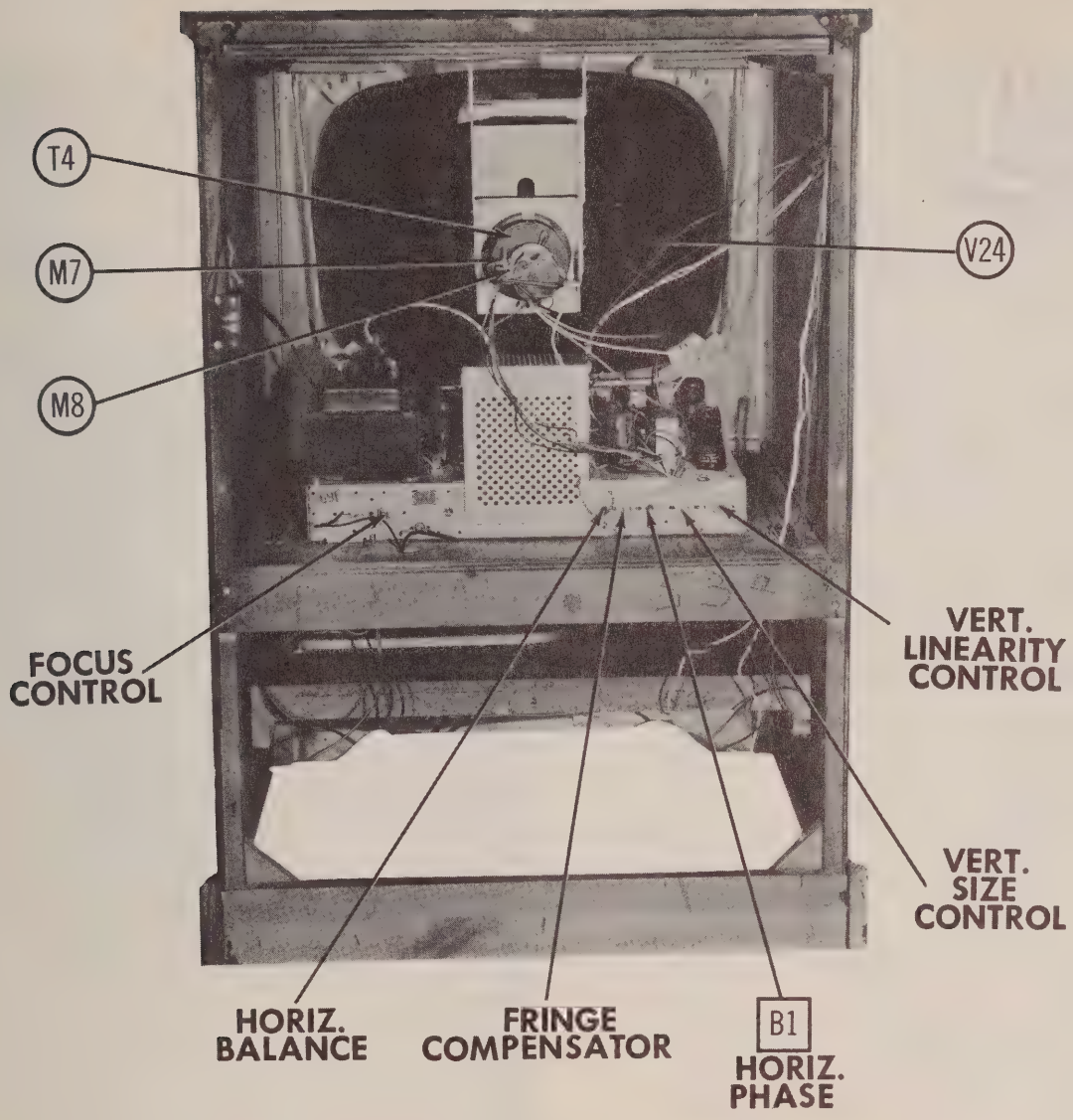
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal phasing as follows:

1. Turn the horizontal hold control to the center of its range.
2. Short the phase coil L29 by means of a clip lead from the black to the white wire on the terminal strip on top of chassis near V18.
3. Short the horizontal control grid to chassis. (Blue wire on same terminal strip as in Step 2).
4. Adjust the horizontal balance control on rear of chassis until picture pulls into sync. (Picture may sway from side to side).
5. Remove short from horizontal phase coil and adjust the horizontal phase slug (B1) for same synchronous condition as in Step 4.
6. Remove the short from the horizontal control grid.

Adjust the horizontal size slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check horizontal yoke for open.

INSUFFICIENT SWEEP

Substitute V18, V19, V20, V17, V22 and V23. Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check R107, R108, R106, C82, C8, T5 and T2.	Check C53, C54, C56 and C57. Check components associated with V18.

DRIVE LINES

Substitute V20 and V19. Check C82, C84 and T2.

COMPRESSED AT LEFT SIDE

Substitute V19, V20, V22 and V23. Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check T2, C82, C84 and other components associated with V19 and V20.	Check C76, C79 and other components associated with V18.

FOLDS

Substitute V19 and V20. Check C82, C84, T2 and other components associated with the horizontal output and damper stages.

PIE CRUST EFFECT

Check C73 for open.

XMAS TREE EFFECT

Check C74 and L29 for open and change of value.
Check C73 for open.

VERTICAL

LOSS OF SWEEP

Substitute V15 and V16. Check waveform at W8.

If Satisfactory	If Unsatisfactory
Check T3, yoke and other components associated with V16.	Check C60, C61, C62 and other components associated with V15.

INSUFFICIENT SWEEP

Substitute V15 and V16. Proceed as outlined under VERTICAL LOSS OF SWEEP.

COMPRESSED AT BOTTOM

Check C2B, T3 and other components associated with V16.

PICTURE FOLDED DOUBLE AND UPSIDE DOWN

Check C61 for open.

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V13, V17 and V18. Check components associated with horizontal control circuit especially V13B and V17.

CRITICAL SYNC

Substitute V13, V17 and V18. Proceed as outlined under HORIZONTAL LOSS OF SYNC.

PULLING PICTURE

Check C72 for open. Check C73 for leaky condition.

VERTICAL

LOSS OF SYNC

Substitute V13, V14 and V15. Check components of the Vertical Control circuits especially V13A and V14.

CRITICAL SYNC

Substitute V13, V14 and V15. Proceed as outlined under VERTICAL LOSS OF SYNC.

TRIGGERING

Substitute V13, V14 and V15. Check circuit near these tubes for filament lead dress.

VIDEO

SOUND BARS

Check adjustment of 4.5MC trap (A13) and Sound Take-off (A8). Check setting of local oscillator.

POOR RESOLUTION

Substitute V1, V3, V4, V5 and V6. Check Video IF Alignment. Check componehts of the Video IF.

POOR CONTRAST

Substitute V6 and V7. Check C35 and C39. Check picture tube.

SMEAR

Substitute V6 and V7. Check L24 for open. Check C35 and C39. Check R43 and R1A for change of value. Check picture tube.

ONE WIDE BLACK BAR ACROSS PICTURE

Check RF Tuner, Video IF, Video Detector and Video Amplifier tubes for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Substitute V8, V9, V10, V11 and V12.
Check socket voltages. Check alignment of Sound IF and ratio detector stages.

BUZZ

Adjust Ratio Detector secondary (A12). If buzz is still present, substitute V10 and readjust A12.

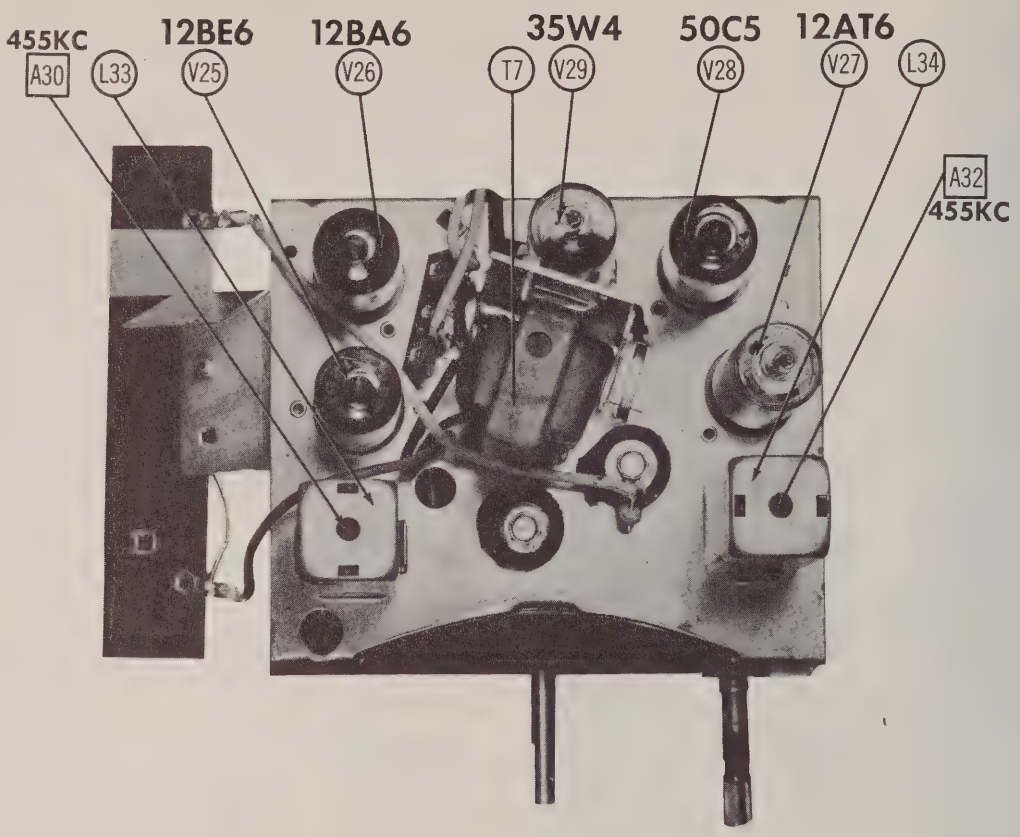
DISTORTED

Substitute V8, V9, V10, V11 and V12. Check stages V11 and V12 using audio signal generator. If no distortion is present, check alignment of sound IF and ratio detector.

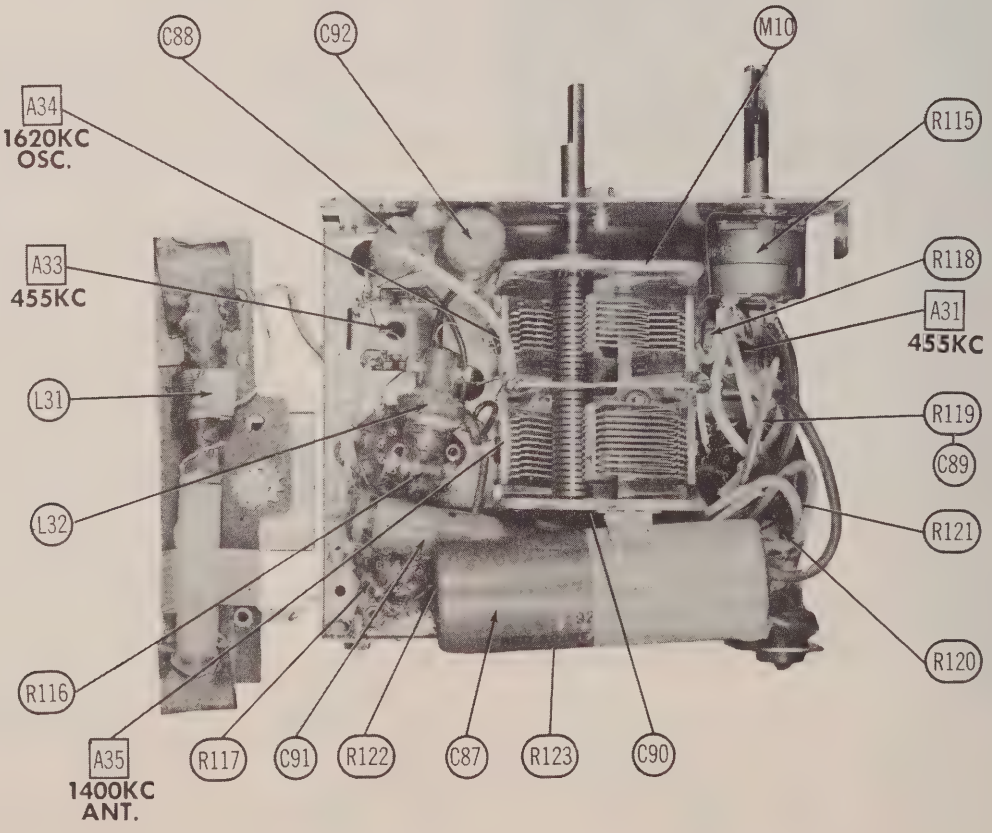
EMERSON MODELS 711F, 712F, 720D, F, 732B,
733F, 734B, 742B (Ch. 120169B, D, F)

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

DENVER, COLORADO



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	800065	6BQ7	9AJ	
V2	Converter	800536	6J6	7BF	
V3	1st Video IF Amp.	800055	6CB6	7CM	
V4	2nd Video IF Amp.	800055	6CB6	7CM	
V5	3rd Video IF Amp.	800055	6CB6	7CM	
V6	Video Detector-AGC Rectifier	800541	6AL5	6BT	
V7	Video Output	800055	6CB6	7CM	
V8	Sound IF Amp.	800533	6AU6	7BK	
V9	Limiter	800533	6AU6	7BK	
V10	Discriminator	800541	6AL5	6BT	
V11	AF Amplifier-AGC Clamper-Noise Suppressor	800057	6AV6	7BT	
V12	Audio Output	800270	6V6GT	7S	
V13	Sync Amplifier-Horiz. Sync Separator	800026	12AU7	9A	
V14	Vert. Sync Separator	800068	6C4	6BG	
V15	Vert. Mult	800380	6SN7GT	8BD	
V16	Vert. Output	800061	6W6GT	7S	
V17	Horiz. Sync Phase Inv.-Horiz. AFC	800026	12AU7	9A	
V18	Horiz. Mult	800380	6SN7GT	8BD	
V19	Horiz. Output	800059	6BQ6GT	6AM	
V20	Damper	800037	6W4GT	4CG	
V21	HV Rectifier	800450	1B3GT	3C	
V22	LV Rectifier	800290	5U4G	5T	
V23	LV Rectifier	800290	5U4G	5T	

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CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V24A	21MP4	21MP4	12C	Used in ch. 120169-B, -F.
B	21FP4A	21FP4A	12C	Used in ch. 120169-D.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	80	300	925232	AFH2-64		BO48		FP378	TVL-3792	Blue
B	40	300		PRS450/4		BR445				Green
C	5	450								Red
C2A	40	250	925221	AFH3-46		CO37		FP378	TVL-3792	Blue
B	100	50		PRS50/100		BRH501		TC3501	TVA-1310	Green
C	10	450								Yellow
D	80	300								Red
C3	3-8		960635		829-10					
C4	3-8		960635		829-10					
C5	3.3		960638	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C6	1000		960138	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C7	.5-3		960634		829-3					
C8	120		960136	BPD-00012	D6-120	TM5T12	GP2K-121	UC-5312	5GA-T12	
C9	10		960636	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C10	5		960637	SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C11	1000		960138	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C12	47			BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C13	.5-3		960634		829-3			CT565A		
C14	1000		960138	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C15	6.8		960639	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C16	1000		960138	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C17	5000		928109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C18	39		928082	SI39N750	TCN-39		N750K-390		5TCU-Q39	
C19	6.8		928084	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C20	1000		928077	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C21	470		928081	SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C22	1000		928077	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	.22	200	922325	P488-22		PTE4P22		PT4025	2TM-P22	
C24	470		928081	SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C25	5000		928109	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C26	1000		928077	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27	680		928076	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C28	680		928076	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C29	1000		928077	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C30	22		928012	SI22	D6-220	5W5Q25	GP1K-220	UC-5422	5GA-Q22	
C31	5		928017	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C32	1000		928077	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C33	.22	200	922325	P488-22		PTE4P22		PT4025	2TM-P22	
C34	1000		928077	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C35	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C36	47	500		1469-00005		5R5Q5		MCB225	MS-45	
C37	.1	200	922315	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C38	1000		928077	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C39	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C40	.01	600	922714	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C41	5000		928109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C42	5000		928109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C43	5000		928109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	5000		928109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C45	68		910221	SI68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C46	5000		928109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C47	5000		928109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C48	110	500	910043							
C49	.001	400	922513	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	Note 1

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C50	.0047	400	923553	P688-0047	DC-473	PTED247	GP2-333-472	PT9347	07M-D47	
C51	.001	400	923513	P688-001	DC-102	PTED2D1	GP2L-102	PT9321	07M-D1	
C52	.047	400	923554	P488-047	DF-503	PTF6347		PT7447	47M-S47	
C53	.0047	400	923553	P688-0047	DC-472	PTED247	GP2-333-472	PT9347	07M-D47	
C54	.01	400	923514	P488-01	DC-103	PTF6S1	GP2-333-103	PT911	47M-S1	
C55	.047	400	923554	P488-047	DF-503	PTF6347		PT7447	47M-S47	
C56	.005	500	910063	1469-00025		SR5T5		MCB2340	MS-35	
C57	47	500	910058	1469-00005		SR5Q5		MCB225	MS-45	
C58	.047	400	923554	P488-047	DF-503	PTF6347		PT7447	47M-S47	
C59	.047	200	923354	P288-047	DF-503	PTF6347		PT7447	47M-S47	
C60	.0047	400	923453	P688-0047	DC-472	PTF6D47	GP2-333-472	PT9347	07M-S47	
C61	.047	400	923554							
C62	.1	400	923515	P488-1	DF-104	PTF6P1		PT7401	47M-P1	
C63	.01	600	922714	P668-01	DC-103	PTF6S1	GP2-333-103	PT911	67M-S1	
C64	82	500	910064							
C65	470	500	910063	1469-0005		SR5T5		MCB2345	MS-35	
C66	470	500	910063	1469-0005		SR5T5		MCB2345	MS-35	
C67	.001	400	923513	P688-001	DC-102	PTF6D1	GP2L-102	PT9321	07M-D1	
C68	390	500	910211	1469-0004		SR5T4		MCB2343	MS-34	
C69	470	500	910063	1469-0005		SR5T5		MCB2345	MS-35	
C70	.0022	400	923523	P688-0022	DC-222	PTF6D22	GP2-333-222	PT9223	07M-D22	
C71	.001	600	923713	P668-001	DC-102	PTF6D1	GP2L-102	PT9321	07M-D1	
C72	.001	400	923513	P688-001	DC-102	PTF6D1	GP2L-102	PT9321	67M-D1	
C73	.015	200	923320	P288-015		PTF6S15		TP9400	07M-S15	
C74	.0047	600	923253	1464-005		1DE5D5		MCB2465	MS-25	
C75	470	500	910063	1469-005		SR5T5		MCB245	MS-35	
C76	820	500	910065							
C77	220	500	910024							
C78	.015	200	922320	P288-015		PTF6S15		TP9400	07M-S15	
C79	1000	500	922413	1468-001		1WSD1		MC255	1FM-S1	
C80	.1	400	923515	P488-1	DF-104	PTF6P1		PT7401	47M-P1	
C81	.22	200	922325	P488-23		PTF6P23		PT7025	27M-P22	
C82	.1	600	923715	P668-1		PTF6P1		PT7501	67M-P1	
C83	500	20000	923068	HV200	TV3-502	MM-C20T5	413-501		20DK-T5	
C84	50	2000	960644						TVM-P	Note 2
C85	.047	400	923300	4892X-05		P4B47		PT4147	47M-S47	
C86	.047	400	923300	4892X-05		P4B47		PT4147	47M-S47	

Note 1. Chassis coded Ⓐ use .0023MFD in this application (part #922523).
Note 2. C84 may vary thru the following values - 38MMF (part #960649), 41MMF (part #960641), 43MMF (part #960642), 44MMF (part #960643), 47MMF (part #928065), 50MMF (part #60644), 52MMF (part #928085), 57MMF (part #960645), 62MMF (part #960646).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	390201	QJ-313 *	RTV-296	SBB-7 01-8	UF152L, UR18A, UB-26	Contrast-Panel Volume-Rear Attach to R1B
B	1Meg	½						
C	Switch							
R2A	200KΩ	½	390181	QU-129	AG-52-8	AB-46	U-43	Brightness
B	Shaft		Not Reg.	C9	KS8-5	AK-4	D6-36	Attach to R2A
R3A	1Meg	½	390156	QU-137	AG-83-8	AB-69	U-56	Vert. Hold
B	Shaft		Not Reg.	C3	KS8-5	AK-4	D6-36	Attach to R3A
R4A	50KΩ	½	390183	QU-123	AG-44-8	AB-31	U-36	Horiz. Hold
B	Shaft		Not Reg.	C3	KS8-5	AK-4	D6-36	Attach to R4A
R5A	5000Ω	2	390197	WX-5000	A43-5000	VK-135	R5000L	Vert. Linearity-Wire wound
B	Shaft		Not Reg.	Not Reg.	FE3-1/4	Not Reg.	Not Reg.	Attach to R5A
R6A	2Meg	½	390196	QU-139	AG-83-8	AB-75	SU-56	Vert. Size
B	Shaft		Not Reg.	Not Reg.	FE3-1/4	AK-1	Not Reg.	Attach to R6A
R7A	2Meg	½	390203	QU-139	AG-83-8	AB-75	SU-56	Fringe Compensator
B	Shaft		Not Reg.	Not Reg.	FE3-1/4	AK-1	Not Reg.	Attach toR7A
C	Switch		Not Reg.	76-1	SWB	KB-1	US-26	Attach to R7A
R8A	200KΩ	½	390219	QU-129	AG-52-8	AB-46	U-43	Horiz. Balance
B	Shaft		Not Reg.	Not Reg.	FE3-1/4	AK-1	Not Reg.	Attach to R8A
R9A	2Meg	½	390196	QU-139	AG-83-8	AB-75	SU-46	Focus
B	Shaft		Not Reg.	Not Reg.	FE3-1/4	AK-1	Not Reg.	Attach to R9A

* CONCENTRIKIT EQUIVALENT - KIT K-3, BASE ELEMENTS & SHAFTS B1T-110 & P1-224 (Panel), B1J-137 & R1-308 (Rear) & SWITCH 76-1.
† Universal Replacement (Mallory exact duplicate part #UR2350).

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA EMERSON PART No.	IRC PART No.	NOTES
R10	15KΩ	½		BTA-15K	
R11	47KΩ	½			
R12	330KΩ	½			
R13	100KΩ	½		BTA-100K	
R14	180KΩ	½			
R15	470Ω	½	370417	BTA-470	
R16	15KΩ	½		BTA-15K	
R17	220KΩ	½			
R18	15KΩ	½			
R19	10KΩ	½		BTA-10K	
R20	4700Ω	½		BTA-4700	
R21	470Ω	½		BTA-470	
R22	470Ω	½	350412	BTA-470	
R23	15Ω	½	340052		
R24	47Ω	½	340172	BTS-47	
R25	470Ω	½		BTS-470	
R26	470Ω	½	350412	BTS-470	
R27	470Ω	½	350412	BTS-470	
R28	27KΩ	½	340832		
R29	47Ω	½	340172	BTS-47	
R30	470Ω	½		BTS-470	
R31	8200Ω	½	340712		
R32	18Ω	½		BTS-180	
R33	470Ω	½	350412	BTS-470	
R34	1Meg	½	351212	BTS-1Meg	
R35	1Meg	½	351212	BTS-1Meg	
R36	1Meg	½	351212	BTS-1Meg	
R37	100KΩ	½	350972	BTS-100K	
R38	15KΩ	½	340772	BTS-15K	
R39	4700Ω	½	340652	BTS-4700	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA EMERSON PART No.	IRC PART No.	NOTES
R40	10KΩ	1		BTA-10K	
R41	1Meg	½	351212	BTS-1Meg	
R42	22KΩ	½		BTS-22K	
R43	6800Ω	2	770692	BTS-6800	
R44	220KΩ	½		BTS-220K	
R45	470KΩ	½	351332	BTS-470K	
R46	470KΩ	½	351332	BTS-470K	
R47	680KΩ	½		BTS-680K	
R48	220Ω	½	340332	BTS-220	
R49	1000Ω	½	340432	BTS-1000	Note 1
R50	47KΩ	½	350892	BTS-47K	
R51	1Meg	½		BTS-1Meg	
R52	10KΩ	1		BTA-10K	
R53	6800Ω	½	340692	BTS-6800	
R54	22KΩ	½	370813	BTA-22K	
R55	1000Ω	½	340492	BTS-1000	Note 1
R56	10Meg	½	351452	BTS-10Meg	
R57	100KΩ	½	340972	BTS-100K	
R58	100KΩ	½	350972	BTS-100K	
R59	10Meg	½	351452	BTS-10Meg	
R60	220KΩ	½	351052	BTS-220K	
R61	470KΩ	½	351132	BTS-470 K	
R62	47Ω	1	370412	BTA-470	
R63	1500Ω	2	790532	BTB-1500	
R64	68KΩ	½	350932	BTS-68K	
R65	100KΩ	½	350972	BTS-100K	
R66	33KΩ	1	380852	BTA-33K	
R67	100KΩ	½	350972	BTS-100K	
R68	10KΩ	½	350732	BTS-10K	
R69	2.2MeG	½	351292	BTS-2.2Meg	

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA EMERSON PART No.	IRC PART No.	NOTES
R70	22KΩ	½	370812	BTA-22K	
R71	6800Ω	½	340692	BTS-6800	
R72	100KΩ	½	340972	BTS-100K	
R73	10Meg	½	351452	BTS-10Meg	
R74	100Ω	½		BTS-100	Note 2
R75	2200Ω	½	340572	BTS-2200	
R76	150KΩ	½	341032	BTS-150K	
R77	820KΩ	½	341192	BTS-820K	
R78	1Meg	½	351212	BTS-1Meg	
R79	47KΩ	½	350892	BTS-47K	
R80	33KΩ	½	350852	BTS-33K	
R81	12KΩ	½	340752	BTS-12K	
R82	2.2Meg	½	351292	BTS-2.2Meg	
R83	470Ω	½	350412	BTS-470	
R84	560Ω	½	340432	BTS-560	
R85	560Ω	½	340432	BTS-560	
R86	390Ω	½	340392	BTS-390	Note 3
R87	330KΩ	½	351092	BTS-330K	
R88	4700Ω	½	350732	BTS-4700	
R89	2200Ω	½	340572	BTS-2200	
R90	22KΩ	½	340812	BTS-22K	
R91	82KΩ	½	340932	BTS-82K	
R92	82KΩ	½	340952	BTS-82K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA EMERSON PART No.	IRC PART No.	NOTES
R93	100KΩ	½	340972	BTS-100K	
R94	2.2Meg	½	351292	BTS-2.2Meg	
R95	47KΩ	1	397892	BTA-47K	
R96	47KΩ	½	370892	BTS-47K	
R97	1000Ω	½	340492	BTS-1000	Note 4
R98	5600Ω 5%	½	380672	BTA-5600 5%	
R99	100KΩ	½	340972	BTS-100K	
R100	120KΩ	½	340992	BTS-120K	
R101	8200Ω	½	340712	BTS-8200	
R102	2200Ω	½	340572	BTS-2200	
R103	470KΩ	½	341132	BTS-470K	
R104	68Ω	2	350812	BW-2-100	
R105	100Ω	2	790252	BTB-6800	
R106	6800Ω	2	780692		
R107	33Ω	½	340112		
R108	100KΩ	½	340972		
R109	8200Ω	½	370712	BTA-8200	Note 3
R110	100Ω	½		BTB-100	Note 3
R111	12500	10	394116		
R112	8.5Ω	5	394122		
R113	220KΩ	½	351052	BTS-220K	
R114	100KΩ	1	380972	BTA-100K	

Note 1. Some Models may use a 470Ω resistor in this application.
Note 2. Some Models may use a 150Ω resistor in this application.
Note 3. Not used in all Models.
Note 4. Some Models may use a 820Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC Ⓐ1.8A	486VCT .250ADC	5VAC Ⓑ 6.5A	6.3VAC Ⓒ1.25A; SEC. 4 12.5VAC Ⓓ4.8A	730037					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	540Ωtap Ⓐ 30Ω	46Ω tap Ⓑ50, 17Ω SEC. 2 8Ω	738068	A-8130 ①	HVO-7 ⑦	TFB-11	D-18		Horiz. Output Trans.
T3	298Ω tap Ⓐ	6Ω	738086	A-8115 ④	A-3038 ⑤	TSO-2 ③ ④	A-101U ③ ④		Vert. Output Trans.
T4A	27Ω	40Ω	708137	DY-11A		TY-7	Y-19		Horiz. Deflection Coils
B	48Ω		708162 ⑥						Vert. Deflection Coils
T5	4Ω		708189				WC-12 ⑦		Width Coil

① Use with width coil WC-5.
② Use with width coil MWC-1.
③ Connect as auto trans.
④ Drill new mounting holes.
⑤ Alternate deflection yoke
⑥ Drill one new mounting hole.
⑦ Connect to coded blue and red dot terminals.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	4.6KΩ	3.7Ω	265Ω	.58Ω	734074	A-3077 ①	A-3019	RO-8 ①	S-3X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3.7Ω	180094 ① 180041 ② 180050 ③ 180082 ④ 180120 ⑤	ST-108 Mod. P6-X 12J11 *	6A1 12A31 †	① 6" PM speakdr used in Model 733F ② 6" PM speaker used in Model 711F, 712F ③ 12" PM speaker used in Models 720D, 720F, 732B, 734B ④ Alternate 12" PM used in Models 720D, 720F, 732B, 734B ⑤ 12" PM speaker used in Model 742B * Viking part no. † 12" Speaker

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ^C)	REPLACEMENT DATA EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.160ADC	86Ω	1.8 Hy.	737016 737017 ①	C-2327 ②	C-2991 ②	TR-1733 ②	C-21K

① Alternate choke
② Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	MILLER PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L2	IF Trap	0Ω						Wound on 68MMF Capacitor
L3	IF Trap	0Ω						Wound on 68MMF Capacitor
L4	Ant. Coils	8Ω CT	0Ω					
L5	IF Trap	1Ω						
L6	Fil. Choke	0Ω						
L7	Newtr.Coil	8Ω						
L8	RF, Mixer Grid & Osc. Coils	0Ω						
L9	Fil. Choke	0Ω						
L10	Feedback Coil	1.2Ω					CLA	6.8 Microhenries
L11	RF Choke	0Ω						
L12	Conv.Plate	0Ω	0Ω					
L13	Adj.Channel Sound Trap	0Ω		720154				
L14	Sound Carrier Trap	0Ω		720149				
L15	1st.Video IF	.2Ω		720147				
L16	Fil. Choke	.44Ω		704230	6175		19-3001	CLA .68 Microhenry
L17	2nd.Video IF	.1Ω	.1Ω	720148	6219			
L18	3rd.Video IF	.1Ω	.1Ω	720148	6219			
L19	Fil. Choke	.44Ω		705230	6175		19-3001	CLA .68 Microhenry
L20	4th.Video IF	.1Ω	.1Ω	720148	6219			
L21	Fil. Choke	.44Ω		705230	6175		19-3001	CLA .68 Microhenry
L22	Shunt Peaking Coil	14.5Ω		708114	4566		19-1023	440 Microhenries
L23	4.5MC Trap	2Ω		708032	1470		20-1004	
L24	Series Peaking Coil	7Ω		708100	6181		19-3250	250 Microhenries
L25	Shunt Peaking Coil	18.5Ω		708115	4650		19-3660	860 Microhenries
L26	1st.Sound IF	8Ω	3.2Ω	720146	6203			
L27	2nd.Sound IF	2.2Ω	2.2Ω	720241 *	6203		17-1021 †	
L28	Discriminator	1.8Ω	1.8Ω CT	708018 ■	6204		17-1023 †	
L29	Horiz. Osc.	45Ω		716074	6210		19-1578	
L30	RF Choke	8.2Ω		705021	4612		CL-1	10 Microhenries

* Alternate part #720081A
■ Alternate part #708151
† Drill one new mounting hole.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA EMERSON PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC NEEDLE	SHURE PART No. CARTRIDGE	SHURE NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE NEEDLE	REMARKS
M1	960029	LT-4-AG	D-AG	W66B	A66U	33	0-2 or S-2	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA EMERSON PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M2	960074	W-30AGA or W-30AGB	JP-312 or JPS-312	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA EMERSON PART No. FUSE	EMERSON PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG	.5A 250V	808003		312.500 (3AG-½A)	357001	AGC-½	4405

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4	RF Tuner	470686	
M5	Relay Unit	515001	Used in Model 733F(Ch. 120169-F) only
M6	Switch	510091	Phono - TV Selector
M7	Centering Magnet	708149	
M8	Ion Trap	708129	
	Cabinet	140459	Model 711F
	Cabinet	140460	Model 712F
	Cabinet	140487	Models 720D, 720F
	Cabinet	140487A	Models 720D, 720F (Blonde)
	Cabinet	140486	Model 732B
	Cabinet	140492	Model 734B
	Cabinet	140488	Model 733F
	Cabinet	140510	Model 742B
	Cabinet	140510A	Model 742B (Blonde)
	Mask	480249	All Models
	Safety Glass	520161	All Models
	Control Door	460252	
	Knob	450138	Contrast
	Knob	450137	Fine Tuning
	Knob (Shank)	450134	On/Off Volume
	Knob (Flange)	450262	On/Off Volume
	Knob (Shank)	450133	Channel Selector
	Knob (Flange)	460261	Channel Selector
	Knob	450034	Phono - TV Switch

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
V25	Converter	800525	12BE6	7CH	
V26	IF Amplifier	800524	12BA6	7BK	
V27	Det.-AVC-AF Amp.	800523	12AT6	7BT	
V28	Audio Output	800032	50C5	7CV	
V29	Rectifier	800526	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C87A	30	150	925218	PRS150/50-30		EDL5315		2N520	TVA-2450	Red
B	50	150								Green
C88	.05	400	923554	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C89A	220									
B	.002									
C	250		♦923024		♦PC-150		♦1408-01		♦103C4	
D										
E	.005									
C90	.02	400	923524	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C91	.05	400	923554	489ZX-05		PJ4S5		PT415	4TM-S5	
C92	.1	400	923515	P488-1		PTE4P1		PT401	4TM-P1	

♦ Items C89A, C89B, C89C, C89D, C98E, R119A, R119B, R119C are combined in one unit. When replacing items separately C89C and C89D should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R115A	500KΩ	½	390218	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R115A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R115A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	EMERSON PART No.	IRC PART No.	
R116	22KΩ	½		BTS-22K	
R117	120Ω	½	340272	BTS-120	
R118	3.3Meg	½	351332	BTS-3.3Meg	
R119A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦923024	BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	EMERSON PART No.	IRC PART No.	
R120	10KΩ	½	350732		
R121	150Ω	½	340292	BTS-150	
R122	1500Ω	1	380532	BTA-1500	
R123	18Ω	½	340072		

♦ Items R119A, R119B, R119C, C89A, C89B, C89C, C89D, C89E are combined one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T7	1.98KΩ	3.7Ω	185Ω	.8Ω	734082	A-3332	A-3025	RO-2 ①	S-3X ①	① Drill one new mounting hole.

COILS (RF-IF)

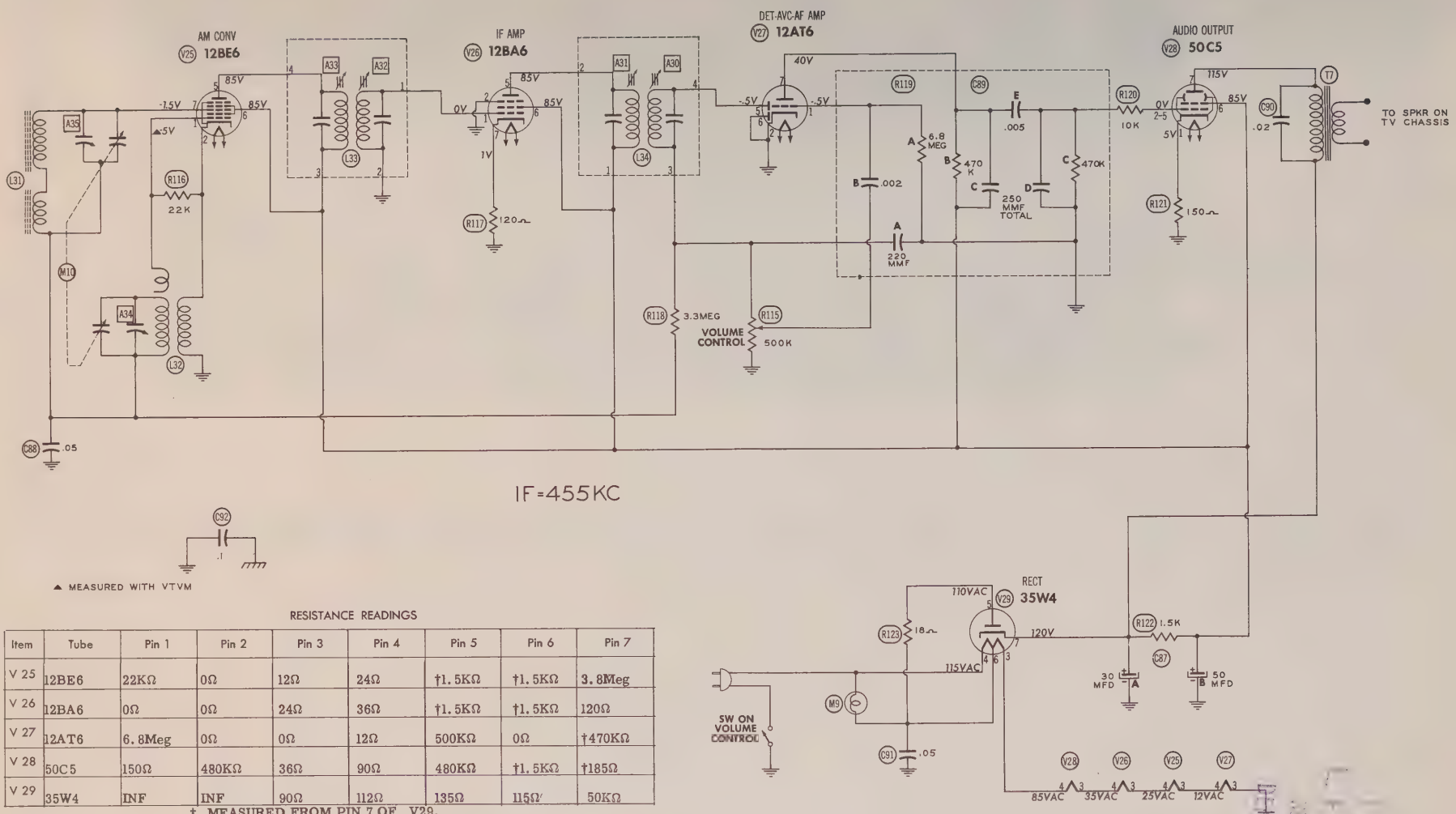
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	EMERSON PART No.	MILLER PART No.	MEISSNER PART No.	
L31	Loop Ant.	.5Ω		700078			
L32	Osc. Coil	.5Ω	7Ω	716071		14-1073	
L33	Input IF	17.5Ω	17Ω	720033	12-C1	16-6758	
L34	Output IF	17.5Ω	17Ω	720033	12-C2	16-6758	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					EMERSON PART No.		
M 9	Bayonet	6-8V	.15A	Brown	807000		

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M10	Tuning Cap.	900091	28-350 MMF; 25-150 MMF
	Back	560319	
	Dial Plate	411400	
	Dial Bezel	520163	
	Knob	460376	Tuning
	Knob	460377	Volume



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 25	12BE6	22KΩ	0Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	3.8Meg
V 26	12BA6	0Ω	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	120Ω
V 27	12AT6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	0Ω	†470KΩ
V 28	50C5	150Ω	480KΩ	36Ω	90Ω	480KΩ	†1.5KΩ	†185Ω
V 29	35W4	INF	INF	90Ω	112Ω	135Ω	115Ω	50KΩ

† MEASURED FROM PIN 7 OF V29.
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RADIO SCHEMATIC

EMERSON MODELS 711F, 712F, 720D, F, 732B, 733F, 734B, 742B (Ch. 120169B, D, F)

TROUBLE SHOOTING AIDS (CONT.)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Substitute V20, V21, V19 and V18. Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check C80, C82, T2, C83, R108 and other components of the High Voltage Network.	Check coupling network between V18 and V19. Check other components associated with V18.

WEAK HIGH VOLTAGE

Substitute V20, V21, V19, V18, V22 and V23.
Proceed as outlined under LOSS OF HIGH VOLTAGE.

BLOOMING

Substitute V20 and V21. Check R108, C83 and picture tube.

POWER

SMALL AND/OR DIM RASTER

Substitute V22 and V23. Measure B plus.

If Low	If Satisfactory
Check B plus filter network for shorts. Check filter capacitors C1A, C1B and C2A.	Substitute V19 and V20. Proceed as outlined under HORIZONTAL INSUFFICIENT SWEEP AND LOW HIGH VOLTAGE.

DIM PICTURE

Substitute V22 and V23. Check B plus. If low, check B plus filter capacitors and network. Check picture tube.

GENERAL

RASTER, NO SOUND, NO PICTURE

Substitute V1, V2, V3, V4. V5 and V6. Check components associated with Video IF stages.

RASTER, SOUND, NO PICTURE

Substitute V7. Check coupling network between V7 and picture tube. Check picture tube.

RASTER, WEAK PICTURE, WEAK SOUND

Check tubes in tuner and video IF strip for weak conditions. Several may be weak causing this condition.

INTERMITTANT STREAKS

Check high voltage section for corona discharge and arcing.

TOTAL LOSS OF SYNC

Substitute V13. Check C55.

POOR FOCUS

Check focus anode potential. It should vary from "0" to approximately 450 VDC over the full range of the focus control.
Check picture tube.

SET DEAD

Check fuse (M1) and R112 for open. Check AC interlock plug and switch attached to volume control. Check T1.

CAUTION !!

This set employes a metal picture tube. Caution should be used when substitution of tubes or adjustments are attempted. Remove power before attempting to remove any tubes.

Symptoms shown above are assumed and are not indicative of the quality and workmanship of this receiving equipment.

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

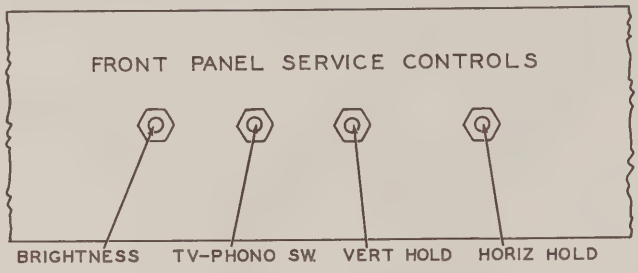
PICTURE TUBE SAFETY GLASS CLEANING

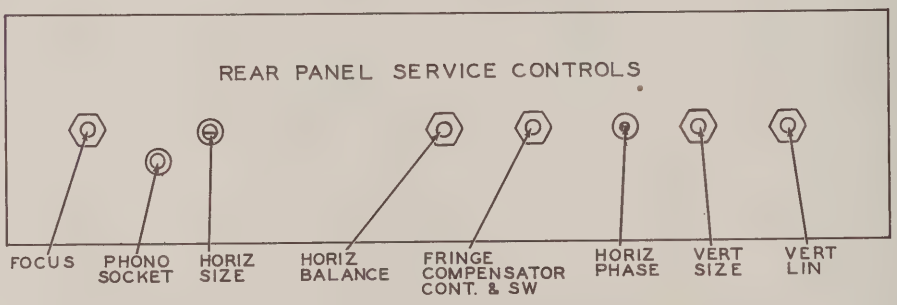
For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





SPECIAL ADJUSTMENTS - FRINGE COMPENSATOR ADJUSTMENT

Improper adjustment may result in audio buzz or picture wiggle. Adjust only if necessary to insure stable operation in fringe areas.

Turn switch on and turn control to near the center of its range. Check all channels received and adjust control for best performance.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal phase slug until the picture synchronizes horizontally.

If synchronization cannot be obtained by the above adjustment see HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS on page 11.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector buzz, adjust the discriminator secondary (L28) located on top of chassis. (See Tube Placement chart).

FUSES

One fuse is used for LV Power Supply protection. (See tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

TV

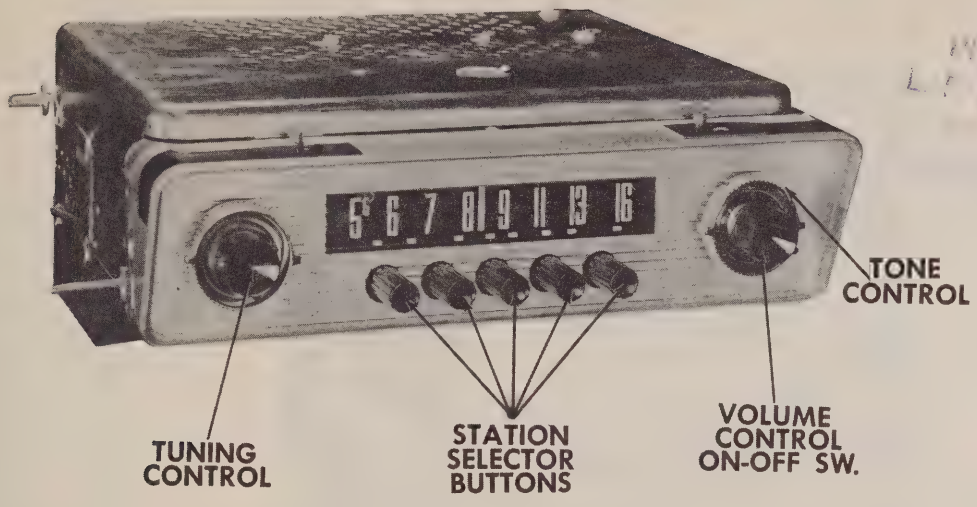
1. Remove 5 push on type control knobs from front panel.
2. Remove 8 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect phono audio plug, phono grd lead, speaker leads, output transformer leads of radio chassis, horiz. yoke leads (2), vert. yoke lead (1), CRT socket, HV lead, phono motor plugs and Radio AC line from TV chassis.
5. Remove 4 bolts. Remove chassis.

PROPERTY OF

RADIO

1. Remove 2 push on type knobs from front panel.
2. Disconnect pilot light.
3. Remove 3 wood screws. Remove chassis mounting board.
4. Remove 2 speaker nuts. Remove speaker.

PROPERTY OF



TRADE NAME	Ford Model FAD-18805-C (Motorola Model 3MF) (For 1953 Ford Automobiles)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Battery Operated Custom Built AM Automobile Superheterodyne Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 Det.-AVC-AF Amp., 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To adjust pointer after alignment tune to a 1300KC signal and rotate pointer adjusting cam to set pointer at 1300KC mark on dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	265KC (400%Mod)	Set at high frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. Repeat adjustments for optimum results.
2.	Fig.1	Thru dummy to receiver antenna receptacle.	1608KC	"	"	A5, A6, A7	Preset tuner cores A8, A9 and A10 to project 1 3/8 inch from ends of coil forms. Adjust A5, A6 and A7 for maximum output in order given.
3.	"	"	1300KC	Move carriage "in" 21/64" from high frequency end stop position.	"	A8, A9 A10	Adjust for maximum output in order given.
4.	"	"	1608KC	High freqency end stop	"	A5, A6, A7	"
	Repeat steps 3 and 4 until no further improvement is noted.						
5.	Fig. 1	Thru dummy to antenna receptacle	600KC	Tune for maximum 600KC signal	Across voice coil	Sensitivity Control	Adjust signal generator output to 4 microvolts. Set sensitivity control for 1 watt output. (1.79 volts on output meter).
	With receiver installed in car and antenna fully extended tune to weak signal around 1400KC and peak A7 for maximum volume.						

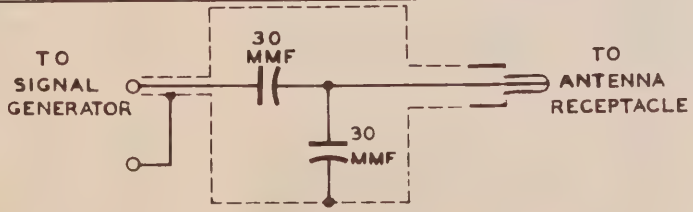


FIG. 1

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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FORD
MODEL FAD-18805-C (3MF)

FORD
MODEL FAD-18805-C (3MF)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det-AVC-AF Amp.	6AT6	6AT6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTE
C1A	▲10	350	23A485677	AFH3-104		CO77		FP328	TVL-3630	
B	■15	350								
C	20	25								
C2	120		21R6715							
C3	27		21R114163							
C4	.1	400	8R472035	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C5	47		21R115070	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C6	220	500	21R6591	1469-00025		5R5T25			MCB240	
C7	150	500	21R115089	1469-00015		5R5T15			MCB236	
C8	47		21R114164	SI47NP0	TCZ-47		NP0K-470	ZT-5447	5TCC-Q47	
C9	43		21R115069							
C10	.05	400	8R14791	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C11	.1	400	8R472035	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C12	5		21K70720	SI5	TCZ-4.7	5W5V5	GP1K-050	ZT-555	5GA-V5	
C13	.01	100	8R472754	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C14	.01	400	8R23690	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C15	330	500	21R2744	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C16	.003	400	8R490437	P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C17	.02	100	8R51209	P288-02	DF-203	PJ2S2		PT412	2TM-S2	
C18	.004	400	8K71909	P688-004	D6-402	PTE6D4	GP2-333-402	PT624	6TM-D4	
C19	.03	1000	8K400883	P1088-03		PTE16S3		PT1613	MB-S3	
C20	.5	100	8R17028	P185-5		MP2P5			68P20	
C21	470		SI470		D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	Note 1

Note 1. Not used in all Models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	18B511635	QJ-458A *			UF16L	Tone-Panel.
B	250KΩ	½					UR254-T753	Volume-Tapped @ 75KΩ-Rear.
C	Switch						US-27	Attach to R1B.
R2	150Ω	1	18K512520					Sensitivity-wire wound.

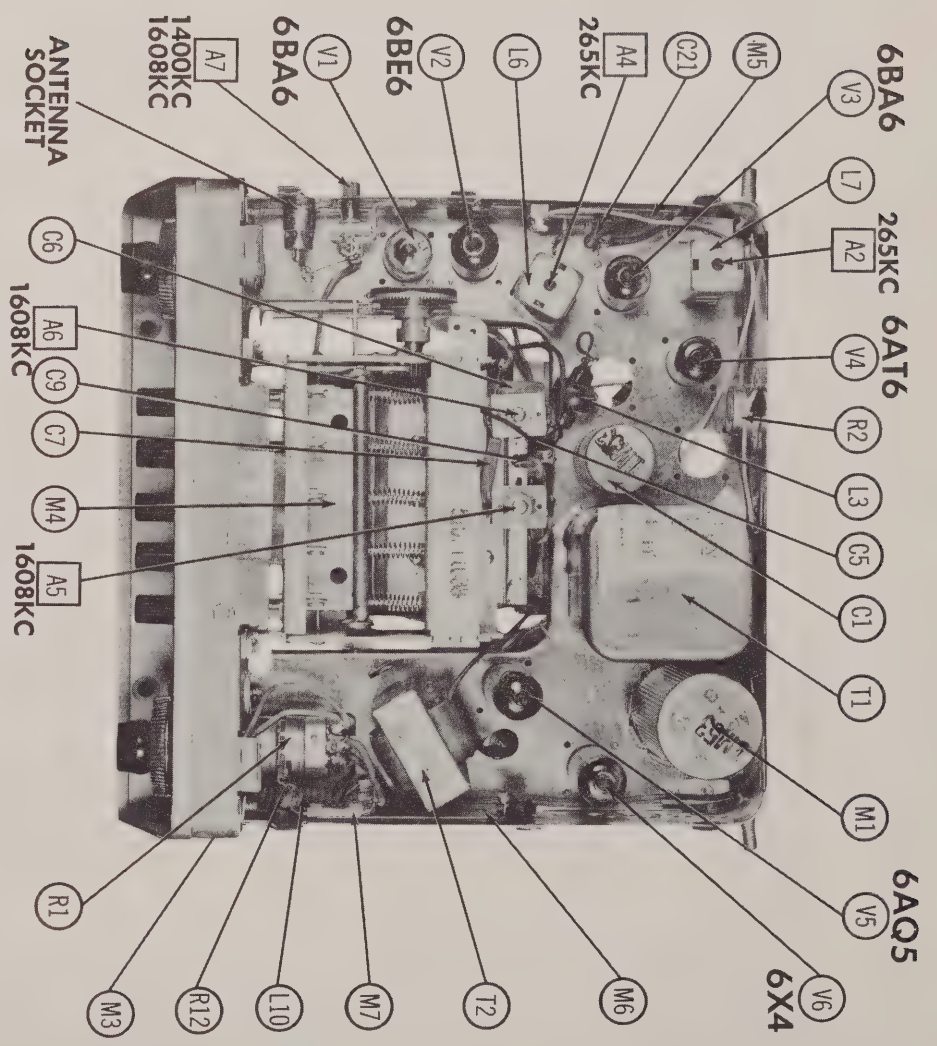
* CONCENTRIKIT EQUIVALENT- KIT K-2, BASE ELEMENTS & SHAFTS B11-137 & P1-106 (Panel) B18-130X & R1-118 (Rear) & SWITCH 76-2.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R3	470KΩ	½	6R6032	BTS-470K	
R4	10KΩ	1	6R6430	BTA-10K	
R5	220KΩ	½	6R6015	BTS-220K	
R6	47KΩ	½	6R6056	BTS-47K	
R7	2.2Meg	½	6R3927	BTS-2.2Meg	
R8	22KΩ	2	6R2098	BTB-22K	
R9	1Meg	½	6R6004	BTS-1Meg	
R10	2.2Meg	½	6R3927	BTS-2.2Meg	
R11	47KΩ	½	6R6056	BTS-47K	
R12	12KΩ	½	6R6394	BTS-12K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R13	4.7Meg	½	6R6446	BTS-4.7Meg	
R14	1Meg	½	6R6004	BTS-1Meg	
R15	220KΩ	½	6R6015	BTS-220K	
R16	220Ω	1	6R6389	BTA-220	
R17	39Ω	½	6R2085	BTS-39	
R18	2200Ω	2	6R476130	BTB-2200	
R19	56Ω	½	6R5614	BTS-56	
R20	56Ω	½	6R5614	BTS-56	
R21	.47Ω	½	17K488266		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VCT 2.7ADC	420VCT .038ADC			25C521454 25C511653 ①			VT-10	

① Alternate transformer.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	5.2KΩ	3.6Ω	608Ω	.66Ω	25B511641	A-3850 ①	A-2930 ①	RO-9 ①	S-3X ①	① Bend mtg. tabs down, file out slots, mount on original mtg. bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"x 9"	6 Volt	3.6Ω	50C511699 50C510198 ① 50C510124 ①	ST-813 Mod. F69-V	69EV6	① Alternate 6"X9" EM Speaker ② 6"X9" PM Speaker
				50C501741 ②	VIKING 69J9	69A2	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MOTOROLA PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Ant. Spark Choke			24A692148			Not used in all models.
L2	Ant. Coil	11.5Ω		24B510175			Less Core: Core Part #46A510788
L3	IF Trap			24K512088			
L4	RF Coil	11.5Ω		24K510176			Less Core: Core Part #46A510788
L5	Osc. Coil	1.2Ω	3.5Ω	24K510112			Less Core: Core Part #46A510788
L6	Input IF	35Ω	35Ω	24K512407*	12-H1	16-6752	
L7	Output IF	39Ω	39Ω	24K512408†	12-H6	16-6754	
L8	Fil. Choke	.2Ω		24K511681			150 Microheneries
L9	Vibrator Hash Choke	0Ω		24K472535	5221		15.2 Microheneries
L10	Fil. Choke	0Ω					Not used in all models.

* Alternate Part No. 24B580193.
† Alternate Part No. 24K591267.

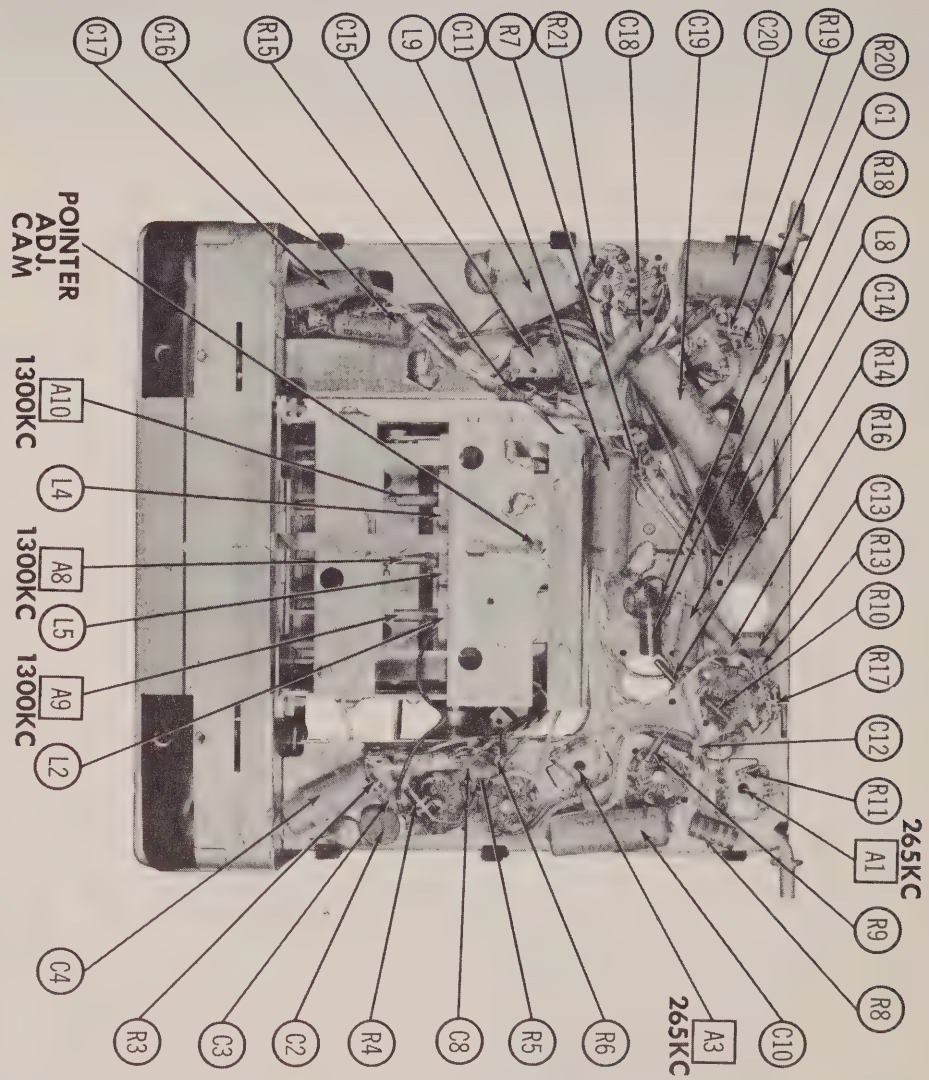
VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Int.	6.3V	115∿	48B3333	5342	859	5342	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	8A-14526	FAB-18862-A (Complete assy. receptacle & leads).	307014. (SFE 14)	157014	SFE14	HDI

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MOTOROLA PART No.		
M3	Bayonet	6-8V	.40A		65X12855		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	R. F. Tuner	51D511638	Model AT-93.
M5	Spark Plate Assy.	1A511586	Spkr.
M6	Spark Plate Assy.	1A591221	"A" Lead
M7	Spark Plate Assy.		.0003 MFD @ 300V.
A7	Trimmer Capacitor	208591269	5-80 MMF (Includes bracket and thumbscrew).
	Bracket, Dial		
	Background	7B511626	
	Escutcheon, Radio		
	Dial.	13K521029	
	Knob	36B511457	Tone Control.
	Knob	1V511756	Tuning.
	Knob	1V511757	Volume.
	Scale Dial	34B511569	

PUSHBUTTON ADJUSTMENT

Collapse the antenna.

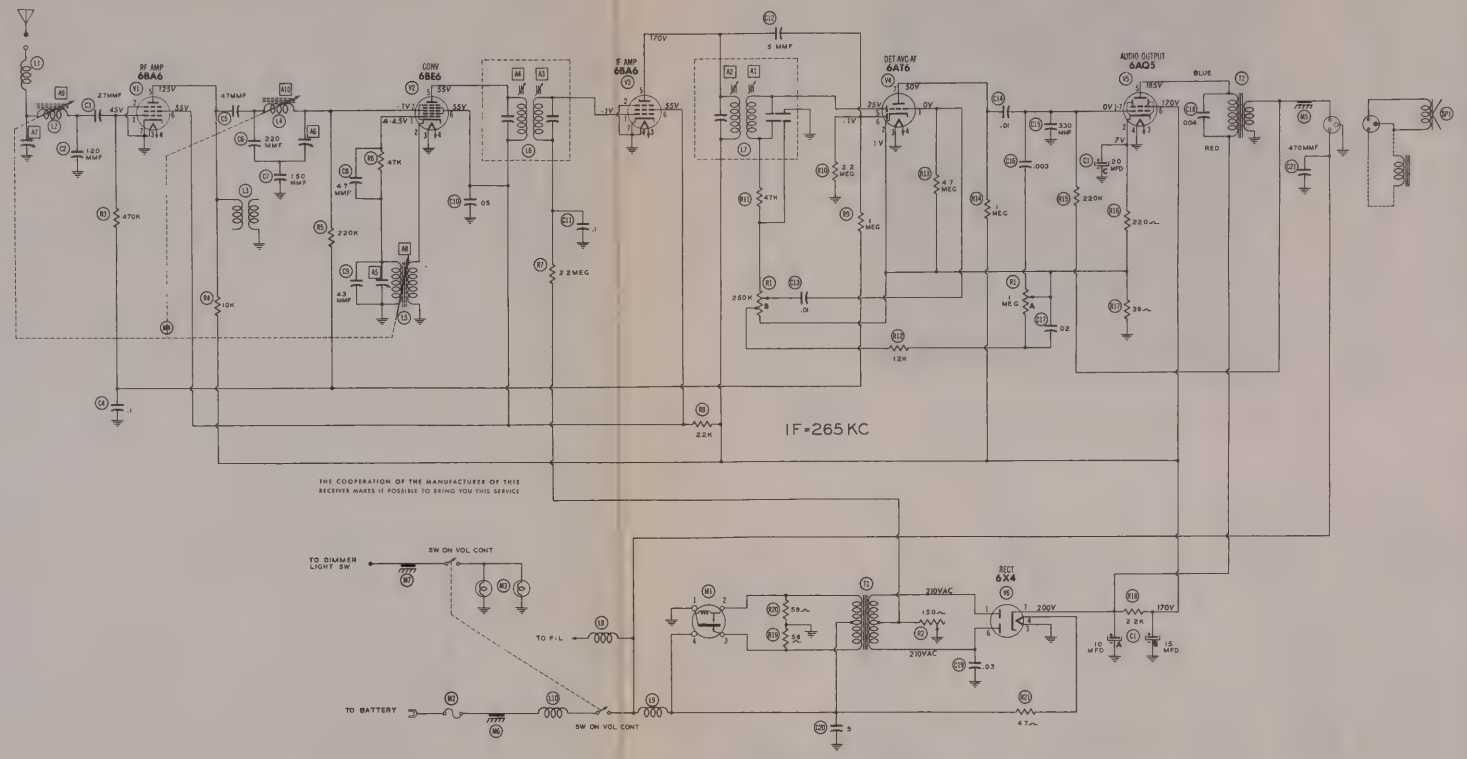
Turn receiver on and let it operate for at least fifteen minutes to insure normal operation.

Loosen push button by turning one turn counter clockwise with the fingers.

Tune manually to desired station. Use care so that tuning is exactly centered.

Press the pushbutton in firmly and release, then tighten the button with the fingers.

Repeat above procedure for remaining pushbuttons.



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	3.75Meg	0Ω	0Ω	1Ω	112KΩ	124KΩ	0Ω
V 2	6BE6	47KΩ	1.2Ω	0Ω	1Ω	124KΩ	124KΩ	3.4Meg
V 3	6BA6	3.2Meg	0Ω	1Ω	1Ω	12.1KΩ	124KΩ	0Ω
V 4	6AT6	4.7Meg	39Ω	9	1Ω	300KΩ	3.3Meg	11 Meg
V 5	6AQ5	220KΩ	380Ω	1Ω	1Ω	160Ω	12.3KΩ	320KΩ
V 6	6X4	450Ω	8Ω	1Ω	1Ω	.2KΩ	475Ω	350KΩ

† MEASURED FROM PIN 7 OF V6

1-DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.
2-Socket connections are shown as bottom views.
3-Measured values are from socket pin to common negative.
4-Battery voltage maintained at 6.3Volts for voltage readings.
5-Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6-Volume control at maximum, no signal applied for voltage measurements.

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GROMMES MODEL 50PG2

GROMMES MODEL 50PG2

GROMMES MODEL 50PG2

TRADE NAME	Grommes Model 50PG2
MANUFACTURER	Precision Electronics, 9101 King Ave., Franklin Park, Ill.
TYPE SET	AC Operated 4 Channel Audio Amplifier
TUBES (Six)	Types 6SC7 Pre-Amp., 6SQ7 AF Amp., 6SL7GT Phase Inv., (2) 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .63 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

GROMMES MODEL 50PG2

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		GROMMES PART No.	STANDARD REPLACEMENT		
V1	Pre Amplifier	6SC7	6SC7	8S	
V2	AF Amplifier	6SQ7	6SQ7	8Q	
V3	Phase Inverter	6SL7GT	6SL7GT	8BD	
V4	Audio Output	6V6GT	6V6GT	7S	
V5	Audio Output	6V6GT	5V6GT	7S	
V6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

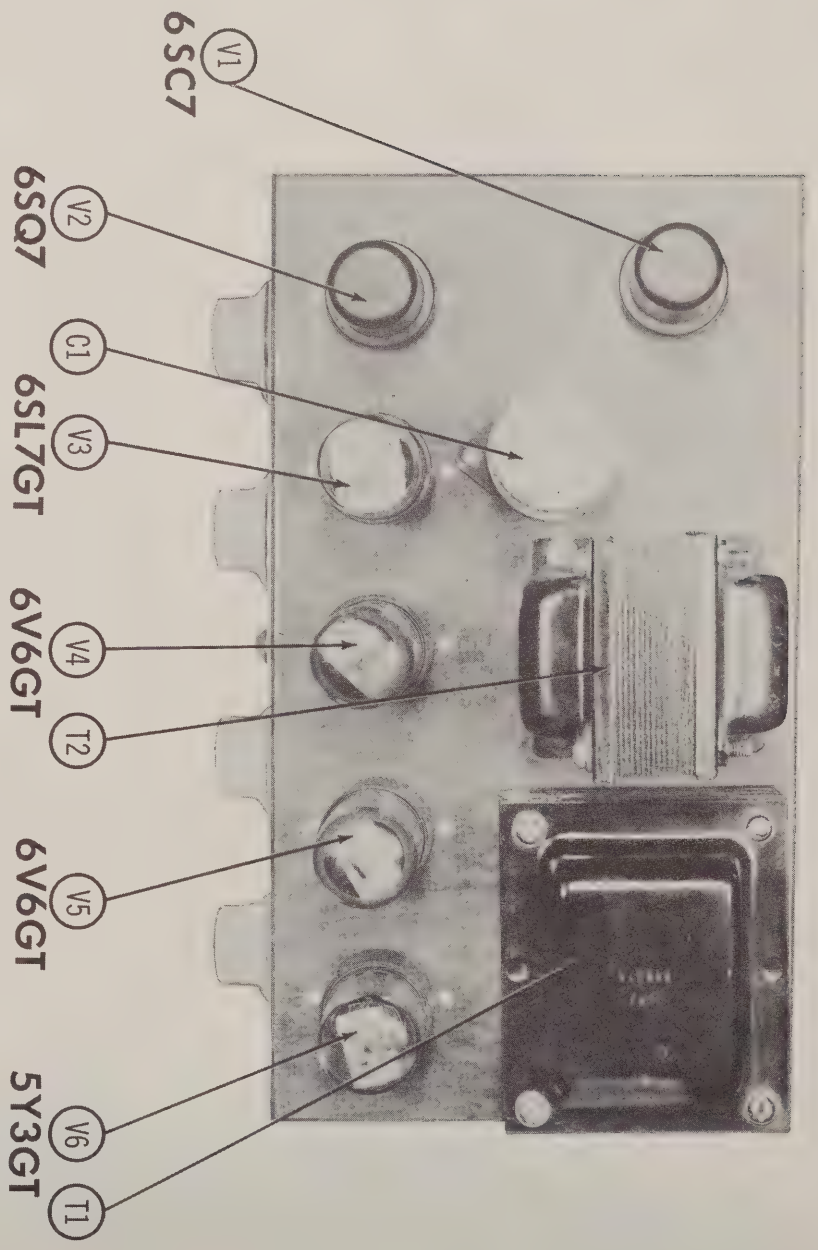
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	GROMMES PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450		AFH4-78		DO64		FP429	TVL-4734	
B	■30	350								
C	◢10	300								
D	20	25								
C2A	10	250		PRS250/10-10		BRD1145B		TCD52	TVA-2722	
B	10	250								
C3	100	25		PRS25/100		BRH251A		TC2501	TVA-1207	
C4	05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C5	62	500			TCZ-62		NPO-333-620			Note 1
C6	05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C7	003	600		P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C8	05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C9	03	400		P488-03		PTE6S3		PT413	6TM-S3	
C10	003	600		P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C11	05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C12	1000	500		1468-001	D6-102	1W5D1	801-001	MC255	1FM-21	
C13	01	400		P488-01	D6-103	PTE451	811-01	PT411	4TM-S1	
C14	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MC241	MS-33	
C15	05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C16	05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	

Note 1. Some models use 68MMF in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GROMMES PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	W-3182	Q18-133X	AT-88	BT-63-S	UT-429	Volume-tapped @ 50KΩ
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A
R2A	1.5Meg	½	W-3181	Q13-139	AG-66-Z	B-76	U-55	Bass
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	1.5Meg	½	W-3181	Q13-139	AG-66-Z	B-76	U-55	Treble
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R3A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	GROMMES PART No.	IRC PART No.	
R4	47KΩ	1/2		BTS-47K	
R5	3.3Meg	1/2		BTS-3.3Meg	
R6	47KΩ	1		BTA-47K	
R7	2.2Meg	1/2		BTS-2.2Meg	
R8	220KΩ	1/2		BTS-220K	
R9	100KΩ	1/2		BTS-100K	
R10	3.3Meg	1/2		BTS-3.3Meg	
R11	47KΩ	1		BTA-47K	
R12	470KΩ	1/2		BTS-470K	
R13	22KΩ	1/2		BTS-22K	Note 1
R14	2200Ω	1/2		BTS-2200	Note 2
R15	100KΩ	1		BTA-100K	
R16	27KΩ	1/2		BTS-27K	Note 3
R17	22KΩ	1/2		BTS-22K	Note 4

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	GROMMES PART No.	IRC PART No.	
R18	220KΩ	1/2		BTS-220K	
R19	27KΩ	1/2		BTS-27K	
R20	22KΩ	1/2		BTS-22K	
R21	100Ω	1/2		BTS-100	
R22	220KΩ	1/2		BTS-220K	
R23	47KΩ	1/2		BTS-47K	
R24	220KΩ	1/2		BTS-220K	
R25	1000Ω	1/2		BTS-1000	
R26	220KΩ	1/2		BTS-220K	
R27	300Ω	5		1 3/4A-300	Note 5
R28	270KΩ	1/2		BTS-270K	
R29	2700Ω	1		BTA-2700	Note 6
R30	5600Ω	2		BTB-5300	

Note 1. Not used in all Models.
Note 2. Some Models may use a 1500Ω resistor in this application.
Note 3. Some Models may use a 33KΩ resistor in this application.
Note 4. Some Models may use a 4700Ω resistor in this application.
Note 5. Some Models may use a 250Ω resistor in this application.
Note 6. Some Models may use a 3300Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	GROMMES PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @.63A	670VCT .075A	5VAC @2A	6.3VCT 1.4A	136P3	PM-8409 ①	P-2953	PH-90 ①	R-11B ①

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		GROMMES PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	7.3KΩ CT	16Ω tap @ 8Ω, 4Ω	252Ω CT	.83Ω tap @ .65Ω, .58Ω		A-3304 ①②			S-31A	

① Drill new mounting holes.
② Use 7000Ω Primary taps.

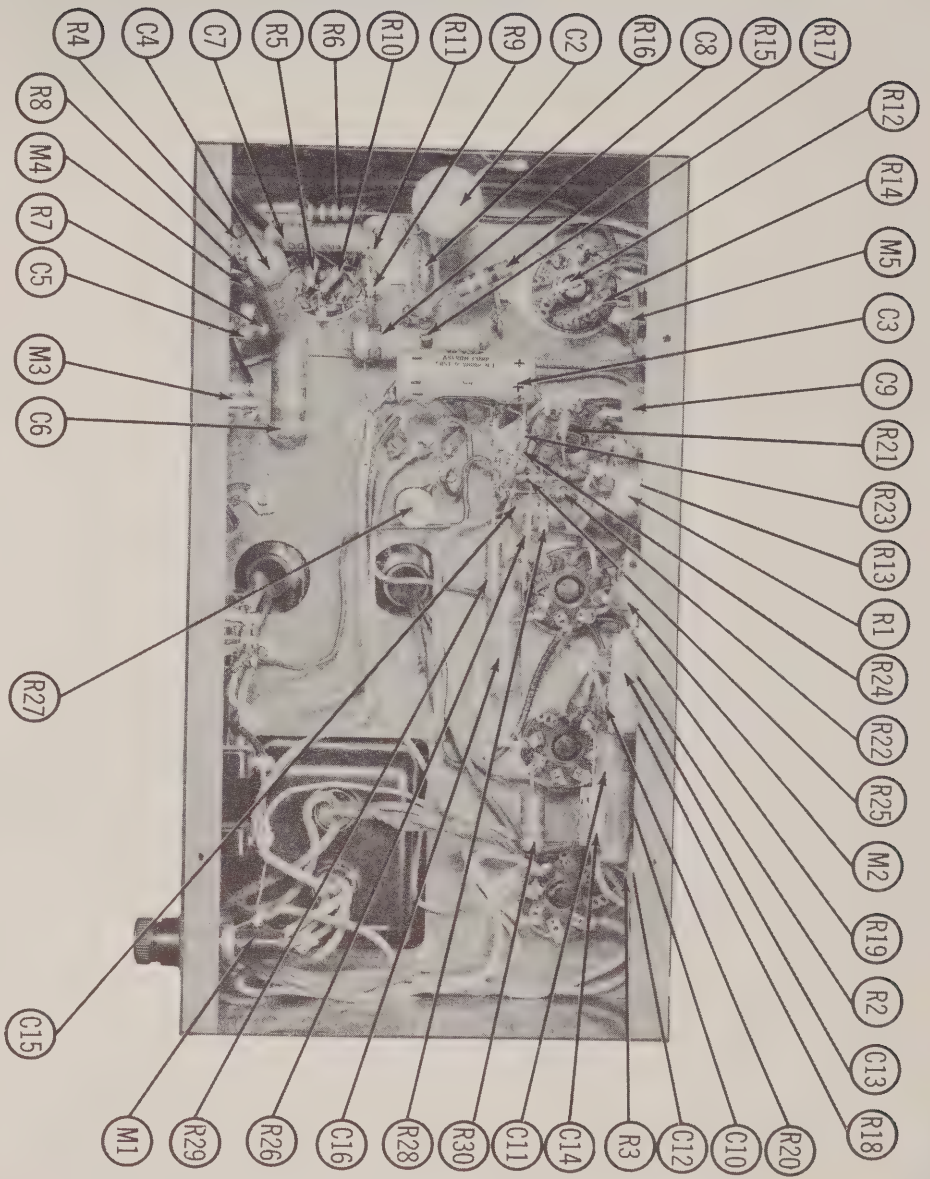
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			GROMMES PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V			312002 (3AG-2A)	342001	AGC-2	HKP

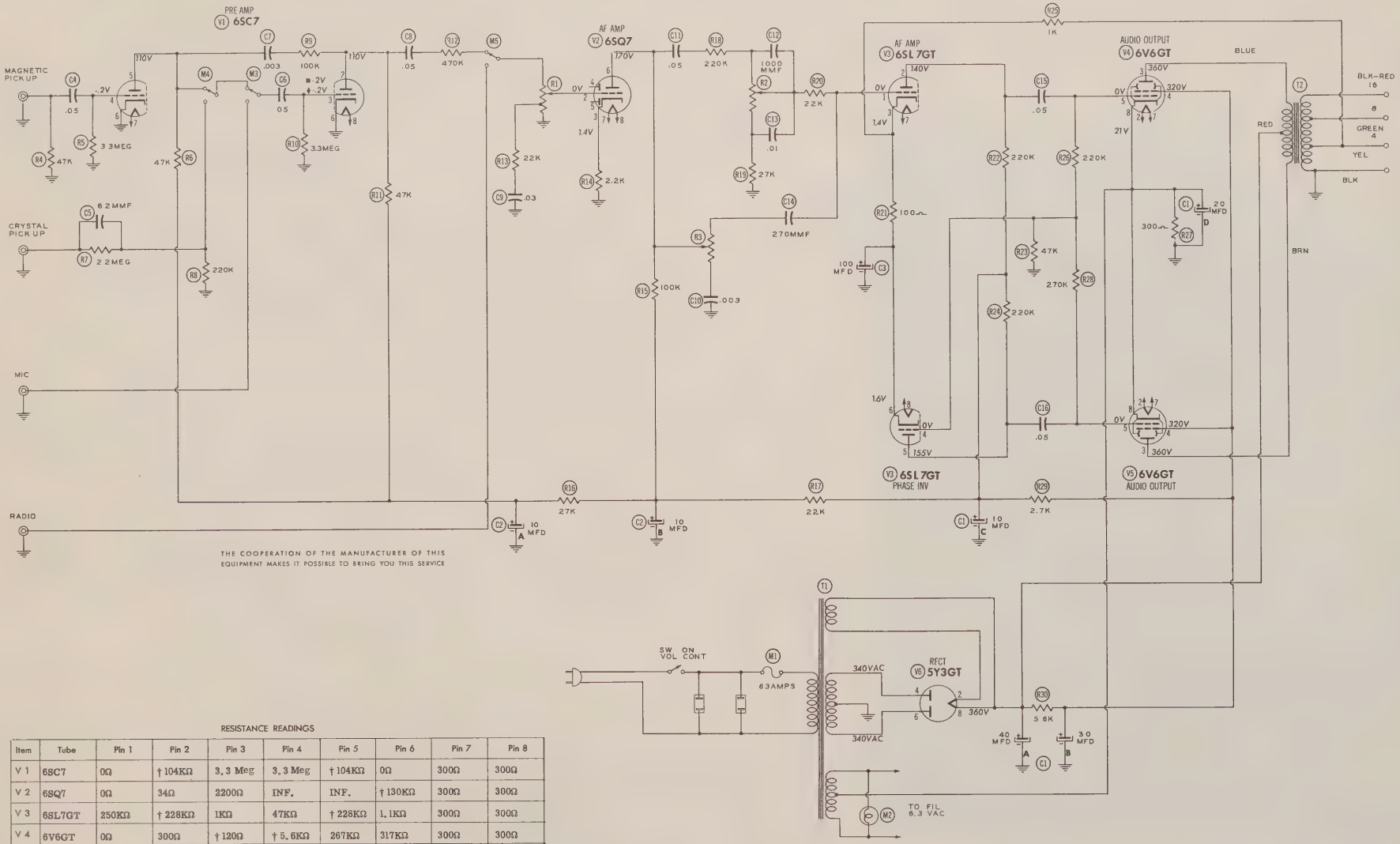
MISCELLANEOUS

ITEM No.	PART NAME	GROMMES PART No.	NOTES
M2	Pilot Light		Type #51
M3	Switch		Phono-microphone selector (SPDT Slide)
M4	Switch		Xtal-Magnetic pickup selector (SPDT Slide)
M5	Switch		Function Selector

CHASSIS—BOTTOM VIEW



GROMMES MODEL 50PG2



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	† 104KΩ	3.3 Meg	3.3 Meg	† 104KΩ	0Ω	300Ω	300Ω
V 2	6SQ7	0Ω	34Ω	2200Ω	INF.	INF.	† 130KΩ	300Ω	300Ω
V 3	6SL7GT	250KΩ	† 228KΩ	1KΩ	47KΩ	† 228KΩ	1.1KΩ	300Ω	300Ω
V 4	6V6GT	0Ω	300Ω	† 120Ω	† 5.6KΩ	267KΩ	317KΩ	300Ω	300Ω
V 5	6V6GT	0Ω	300Ω	† 120Ω	† 5.6KΩ	317KΩ	INF.	300Ω	300Ω
V 6	5Y3GT	INF.	115KΩ	INF.	108Ω	INF.	116Ω	INF.	115KΩ

■ MEASURED WITH MAGNETIC-CRYSTAL SWITCH IN MAGNETIC POSITION.
♦ MEASURED WITH MAGNETIC-CRYSTAL SWITCH IN CRYSTAL POSITION.
RESISTANCE MEASURED WITH BASS AND TREBLE CONTROLS AT 0.
† RESISTANCE MEASURED TO PIN 2 OF V6.

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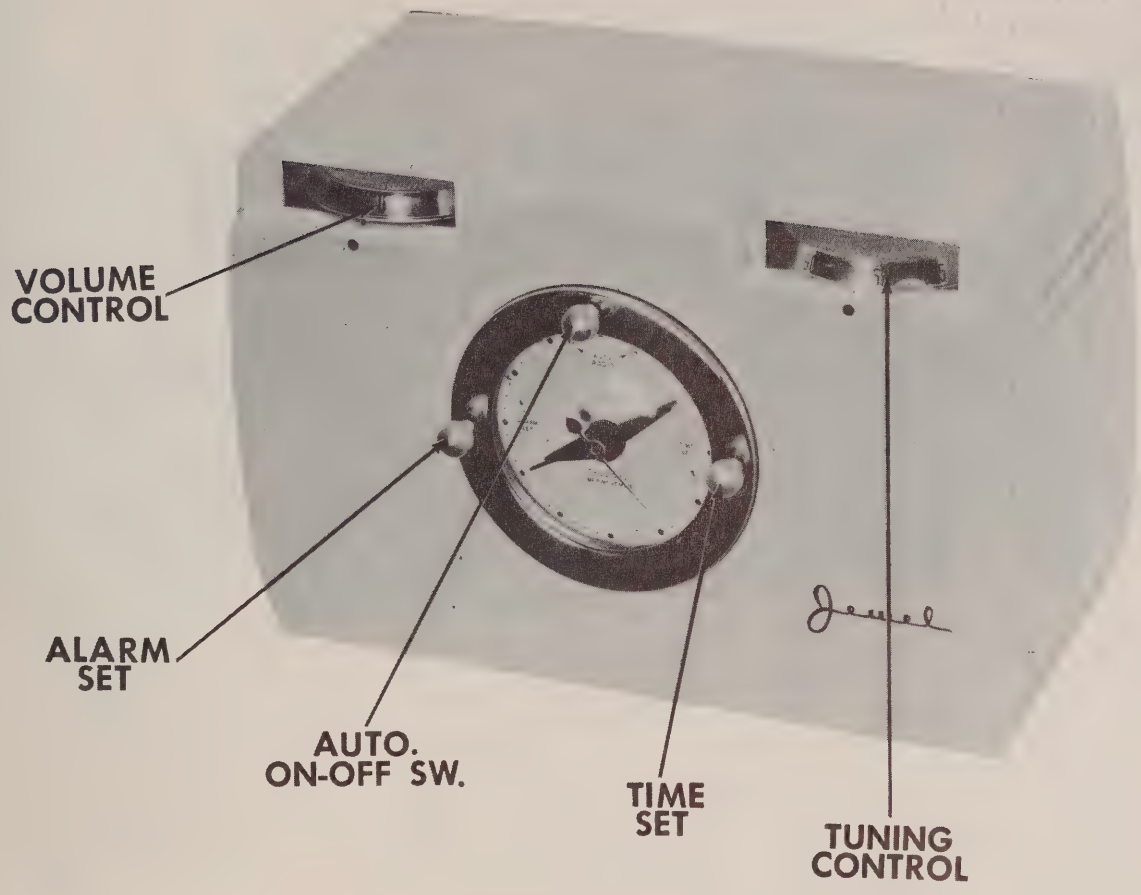
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

JEWEL
MODEL 5250



JEWEL
MODEL 5250

TRADE NAME	Jewel Model 5250
MANUFACTURER	Jewel Radio Corp., 900 Passiac Ave., East Newark, N.J.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12AU6 IF Amp., 12AV6 Det-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	.23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	550-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position . Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	Tune to 1400KC signal.	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal.	"	A4	"

Turn tuning gang fully closed and set "55" on dial to coincide with index mark on cabinet.

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PARTS LIST AND DESCRIPTIONS

JEWEL MODEL 5250

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: JEWEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12AU6	12AU6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV3	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: JEWEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		PRS150/50-30		EDL5315		2N520	TVA-2450	Red
B	30	150								Blue
C2	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C4	3.3			SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C5	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C6	250	500		1468-00025	D6-251	5W5T25	GP2K-251	MC240	1FM-325	
C7	2000			BPD-002	D6-202	TM5D2	801-002	DC-522	5HK-D2	
C8	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C9	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C10	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C11	.05	400		P488-05		PTE4S5		PT415	4TM-S5	
C12	.1	200		P288-1		PJ2P1		PT401	2TM-P1	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2 Meg	½	50-34	Q13-139	AG-66-Z	AB-76	U-55	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A

RESISTORS

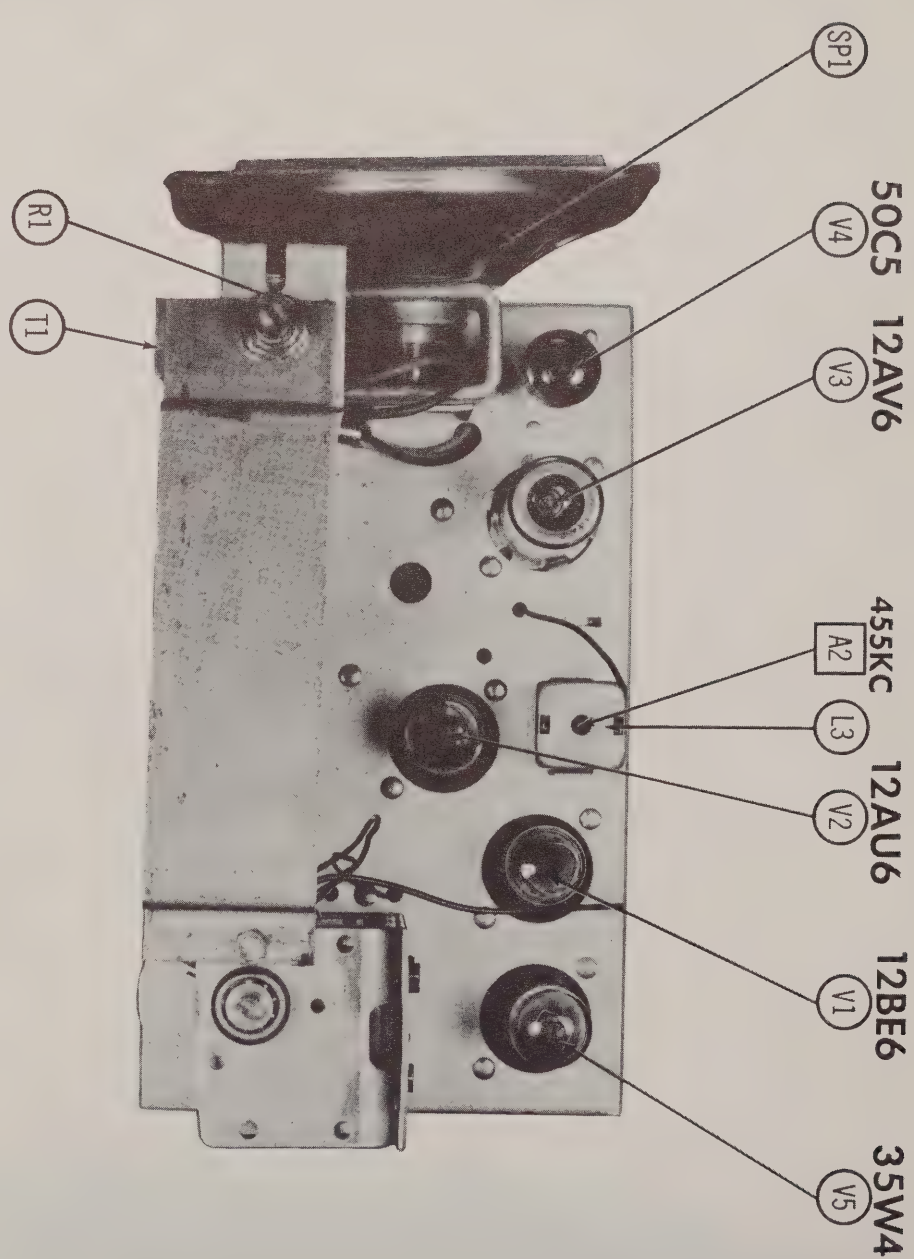
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	NOTES
R2	22KΩ	½		BTS-22K	
R3	3.3Meg	½		BTS-3.3Meg	
R4	10KΩ	½		BTS-10K	
R5	100KΩ	½		BTS-100K	
R6	10Meg	½		BTS-10Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	NOTES
R7	470KΩ	½		BTS-470K	
R8	470KΩ	½		BTS-470K	
R9	220KΩ	½		BTS-220K	
R10	22Ω	1			
R11	1500Ω	1		BTA-1500	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: JEWEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.3KΩ	3.3Ω	170Ω	.46Ω	Part of Spkr.	A-3332 ①	A-3025 ①	RO-2 ①	S-1X ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	JEWEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	80-30B	ST-113 Mod. P4-X	4A07	

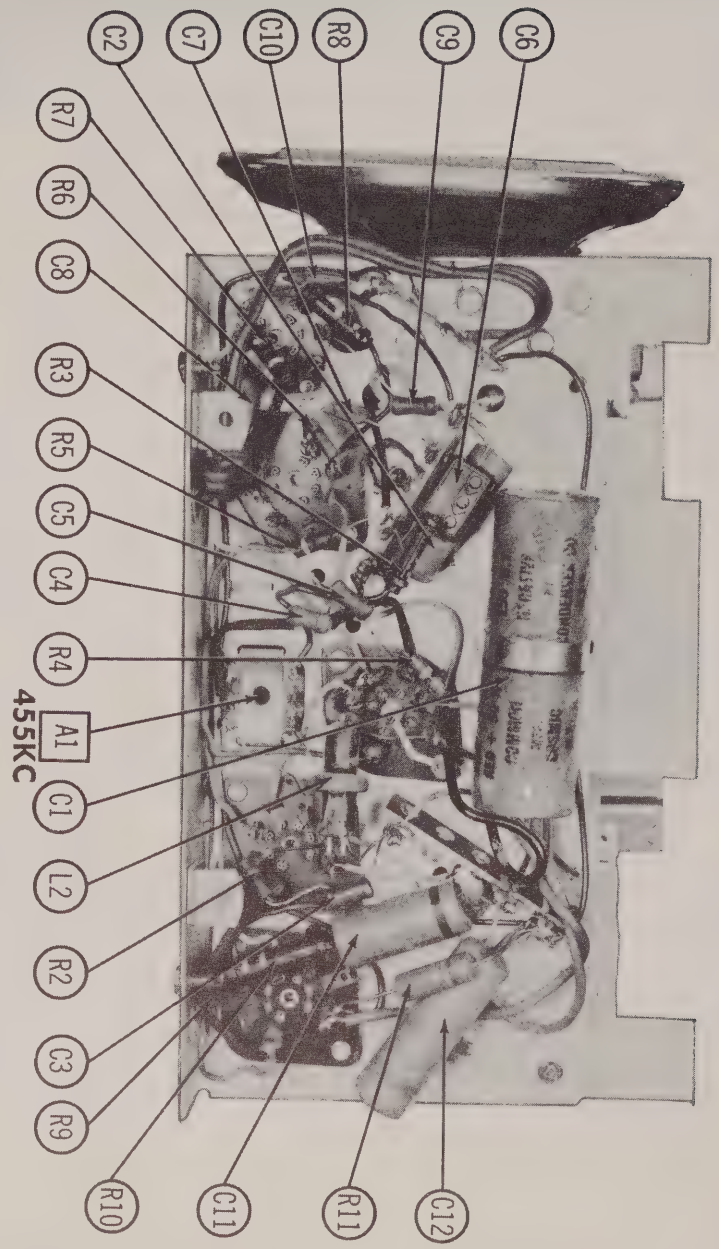
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	JEWEL PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Loop Ant.	0Ω	3.3Ω	125-64	71-Osc. *		Includes cabinet back Tapped @ .5Ω
L2	Osc. Coil	6.3Ω					
L3	IF Trans.	24Ω	24Ω	61-26			Pri. tapped @ .8Ω

MISCELLANEOUS

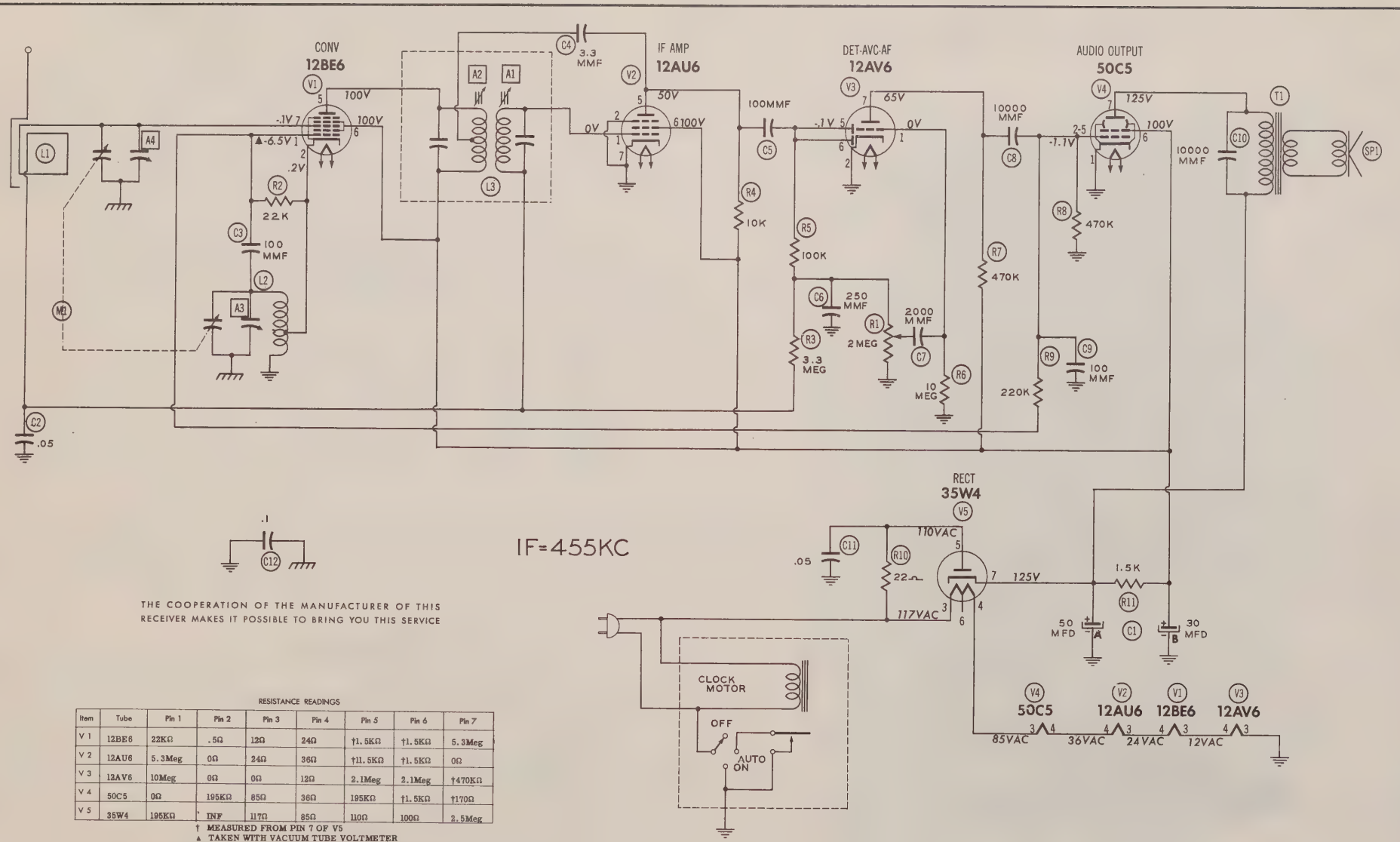
ITEM No.	PART NAME	JEWEL PART No.	NOTES
M1	Tuning Capacitor		28-442MMF, 16-122MMF

CHASSIS—BOTTOM VIEW



JEWEL MODEL 5250

JEWEL MODEL 5250



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	5.3Meg
V 2	12AU6	5.3Meg	0Ω	24Ω	36Ω	†11.5KΩ	†1.5KΩ	0Ω
V 3	12AV6	10Meg	0Ω	0Ω	12Ω	2.1Meg	2.1Meg	†470KΩ
V 4	50C5	0Ω	195KΩ	85Ω	36Ω	195KΩ	†1.5KΩ	†170Ω
V 5	35W4	195KΩ	INF	117Ω	85Ω	110Ω	100Ω	2.5Meg

† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

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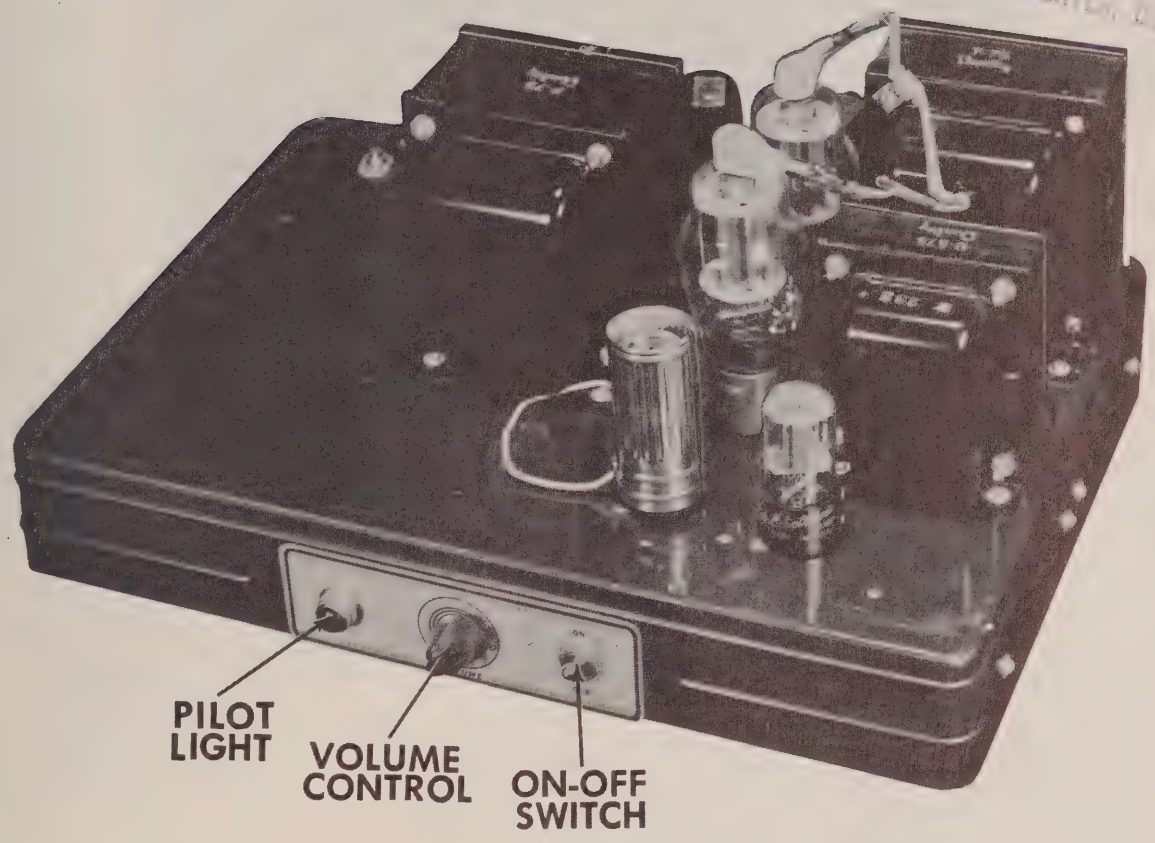
206-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. BANKSHIP
DENVER, COLORADO

MASCO
MODEL MB-77



MASCO
MODEL MB-77

TRADE NAME	Masco Model MB-77
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th.St., Long Island City 3, N.Y.
TYPE SET	AC Operated 75 Watt Booster Amplifier
TUBES (Seven)	Types 6SL7GT AF Amp.-Phase Inv., 6SN7GT Driver, (2) 807 Audio Output, (3)5Y3GT Rectifier
POWER SUPPLY	117-130 Volts AC-60 Cycles RATING 1.26 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

MASCO
MODEL MB-77

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier Phase Inv.	6SL7GT	6SL7GT	8BD	
V2	Driver	6SN7GT	6SN7GT	8BD	
V3	Audio Output	807	807	5AW	
V4	Audio Output	807	807	5AW	
V5	LV Rectifier	5Y3GT	5Y3GT	5T	
V6	HV Rectifier	5Y3GT	5Y3GT	5T	
V7	HV Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	8	450		PRS450/8		BR845A		TC71	TVA-1704	
C3A	10	450		AFH4-10		D009		FP434	TVL-4760	
B	■10	450								
C	▬10	450								
D	▲10	450								Note 1
C3	16	450		PRS450/16		BR1645A		TC74	TVA-1708	
C4	50	50		PRS50/50		BR505		TC39	TVA-1308	
C5	50	50		PRS50/50		BR505		TC39	TVA-1308	
C6	10	50		PRS50/10		BR105		TC32	TVA-1304	
C7	10	50		PRS50/10		BR105		TC32	TVA-1304	
C8	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	Note 2
C9	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C10	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C11	56									
C12	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C13	.1	600		689ZX-1		PJ6P1		PT601	6TM-P1	Note 3
C14	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	Note 4
C15	100	500		1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	Note 4

Note 1. C2D not used.
Note 2. Some Models use .01MFD in this application.
Note 3. Some Models use .05MFD in this application.
Note 4. Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	33-010-188	Q13-133	AG-60-Z	B-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A.
R2A	50Ω	2			A43-50		C50P*	Hum balance - wire wound.
B	Shaft				FKS-1/4		Not Req.	Attach to R2A.

* USE MALLORY WASHERS (PART NO. 203 & 212) TO INSULATE CONTROL FROM CHASSIS.

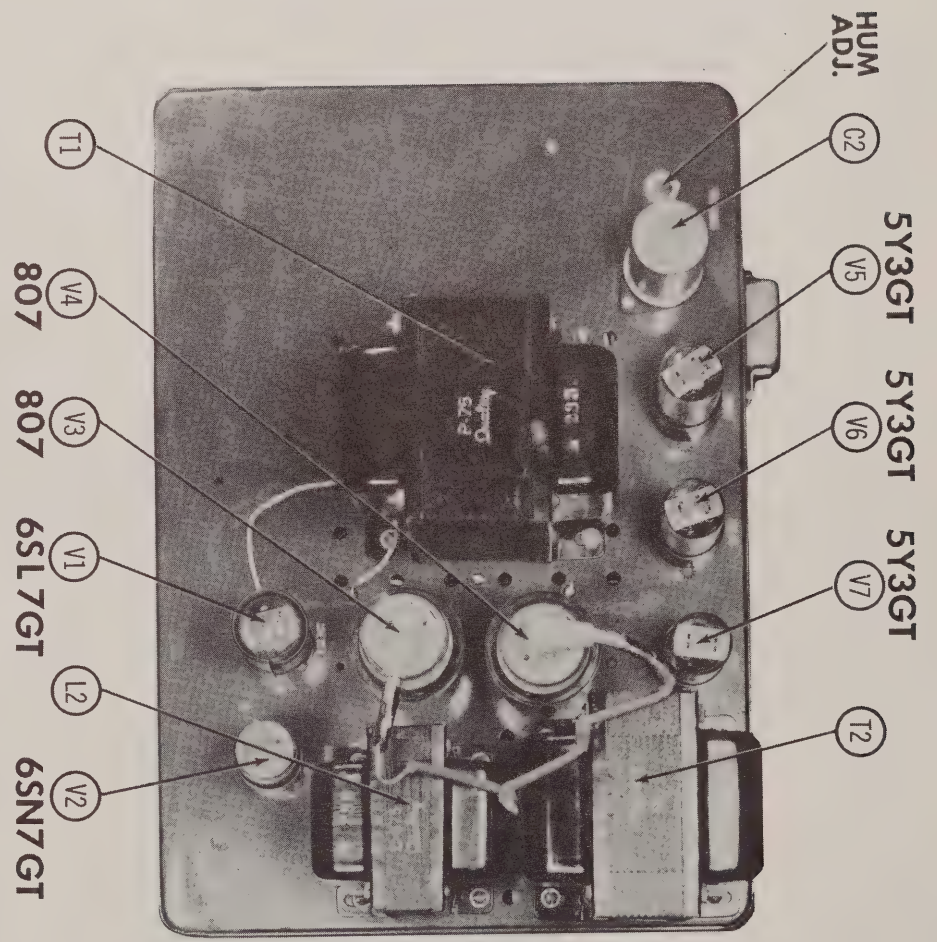
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R3	270Ω	½		BTS-270	
R4	270Ω	1½		BTS-270	
R5	470Ω	1		BTA-470	
R6	3300Ω	½		BTS-3300	
R7	270KΩ	½		BTS-270K	
R8	3600Ω	½			Note 1
R9	40KΩ	½			Note 1
R10	270KΩ	½		BTS-270K	
R11	1Meg	½		BTS-1Meg	
R12	47KΩ	½		BTS-47K	Note 1
R13	1Meg	½		BTS-1Meg	
R14	1500Ω	½		BTS-1500	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R15	1Meg	½		BTS-1Meg	
R16	1500Ω	1½		BTS-1500	
R17	12KΩ	½		BTS-12K	
R18	47Ω	1			
R19	47Ω	1			
R20	47KΩ	½		BTS-47K	
R21	10KΩ	20		2D-10K	
R22	470Ω	1		BTA-470	
R23	1000Ω	10		1 3/4AA-1000	Note 2
R24	20KΩ	25		4½E-20K	
R25	20KΩ	25		4½E-20K	

Note 1. Not used in all Models.
Note 2. This resistor is adjustable.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	125VAC w/117VAC tap ⓐ 1.26A	1700VCT @ 100ADC	600VCT @ .046ADC SEC. 4 5VAC @ 4A	6.3VAC @ 3A SEC. 5 5VAC @ 2A	P-75				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	4.5KΩ CT	140V tap 70V ⓐ 16Ω, 8Ω, 4Ω	85ΩCT	3.84Ω tap 2Ω ⓐ .54Ω, .45Ω, .35Ω	T75					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.047A	120Ω	5.2 Hy.	C-235	C-1001	C-2975 ①		
L2	.082A	55Ω	5.2 Hy.	C-575	C-1412 ①			

① Drill new mounting hole.

(DRIVER) CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L3	.014A At Center tap	147Ω CT	12HY	C-60				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MASCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 250V			312003 (3AG-3A)	351009	AGC3	

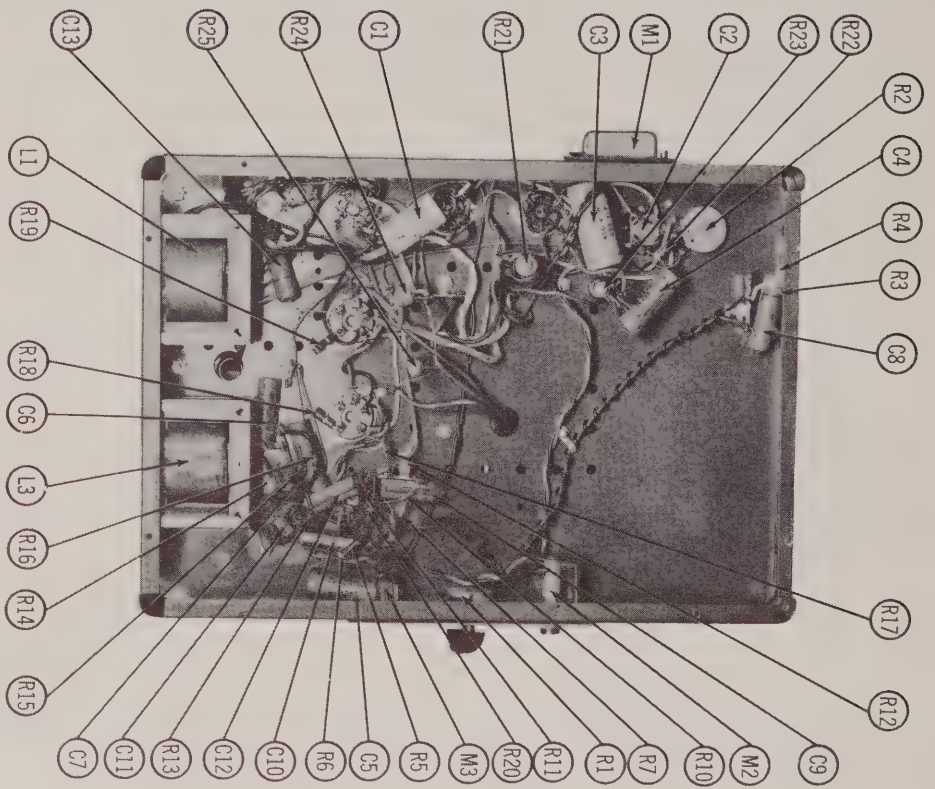
DIAL LIGHTS

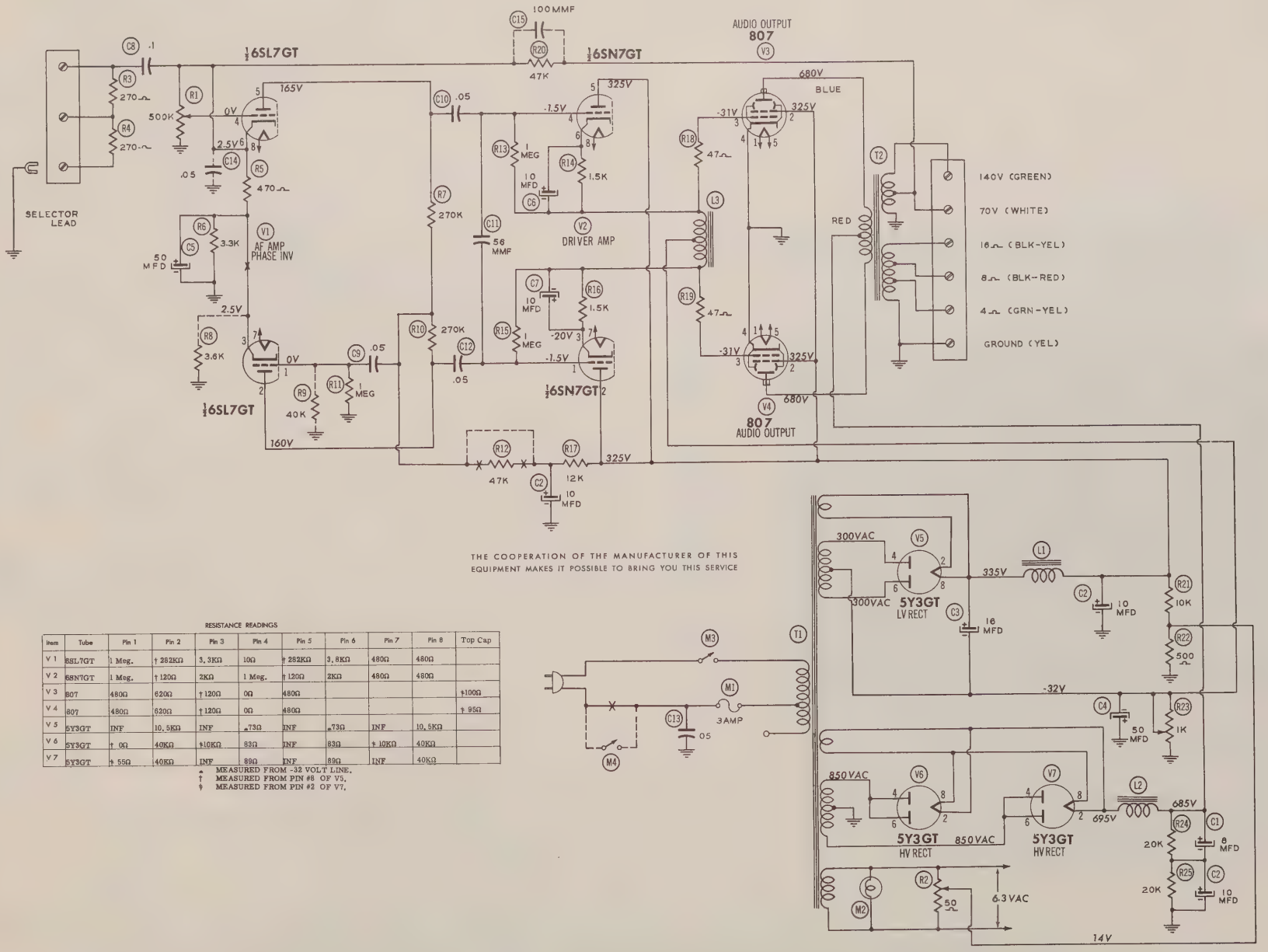
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MASCO PART No.		
M2	Bayonet	6-8	.25	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M3	Switch		Off/On (Toggle)
M4	Switch		Interlock (Not used in all Models)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Top Cap
V 1	6SL7GT	1 Meg.	† 282KΩ	3, 3KΩ	10Ω	† 282KΩ	3, 8KΩ	480Ω	480Ω	
V 2	6SN7GT	1 Meg.	† 120Ω	2KΩ	1 Meg.	† 120Ω	2KΩ	480Ω	480Ω	
V 3	807	480Ω	620Ω	† 120Ω	0Ω	480Ω				‡100Ω
V 4	807	480Ω	620Ω	† 120Ω	0Ω	480Ω				† 95Ω
V 5	5Y3GT	INF	10, 5KΩ	INF	⁂73Ω	INF	⁂73Ω	INF	10, 5KΩ	
V 6	5Y3GT	† 0Ω	40KΩ	‡10KΩ	83Ω	INF	83Ω	‡ 10KΩ	40KΩ	
V 7	5Y3GT	‡ 55Ω	40KΩ	INF	89Ω	INF	89Ω	INF	40KΩ	

⁂ MEASURED FROM -32 VOLT LINE.
† MEASURED FROM PIN #8 OF V5.
‡ MEASURED FROM PIN #2 OF V7.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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206-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RCA VICTOR
MODEL 2-XF-91 (Ch. RC-1121)

RCA VICTOR
MODEL 2-XF-91 (Ch. RC-1121)

RCA VICTOR
MODEL 2-XF-91 (Ch. RC-1121)

TRADE NAME	RCA Victor Model 2-XF-91 (Ch. RC1121)	
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.	
TYPE SET	AC/DC Operated AM-FM Superheterodyne Receiver	
TUBES (Eight)	Types 6BJ6 RF Amp., 19X8 Conv., 12BA6 1st. AM-FM IF Amp., 12AU6 2nd. AM-FM IF Amp., 12AU6 3rd. FM IF Amp., 12AL5 FM Det., 12AV6 AM Det.-AVC-AF Amp., 35C5 Audio Output	
POWER SUPPLY	110-120 Volts AC/DC	RATING .30 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC	FM 88-108MC

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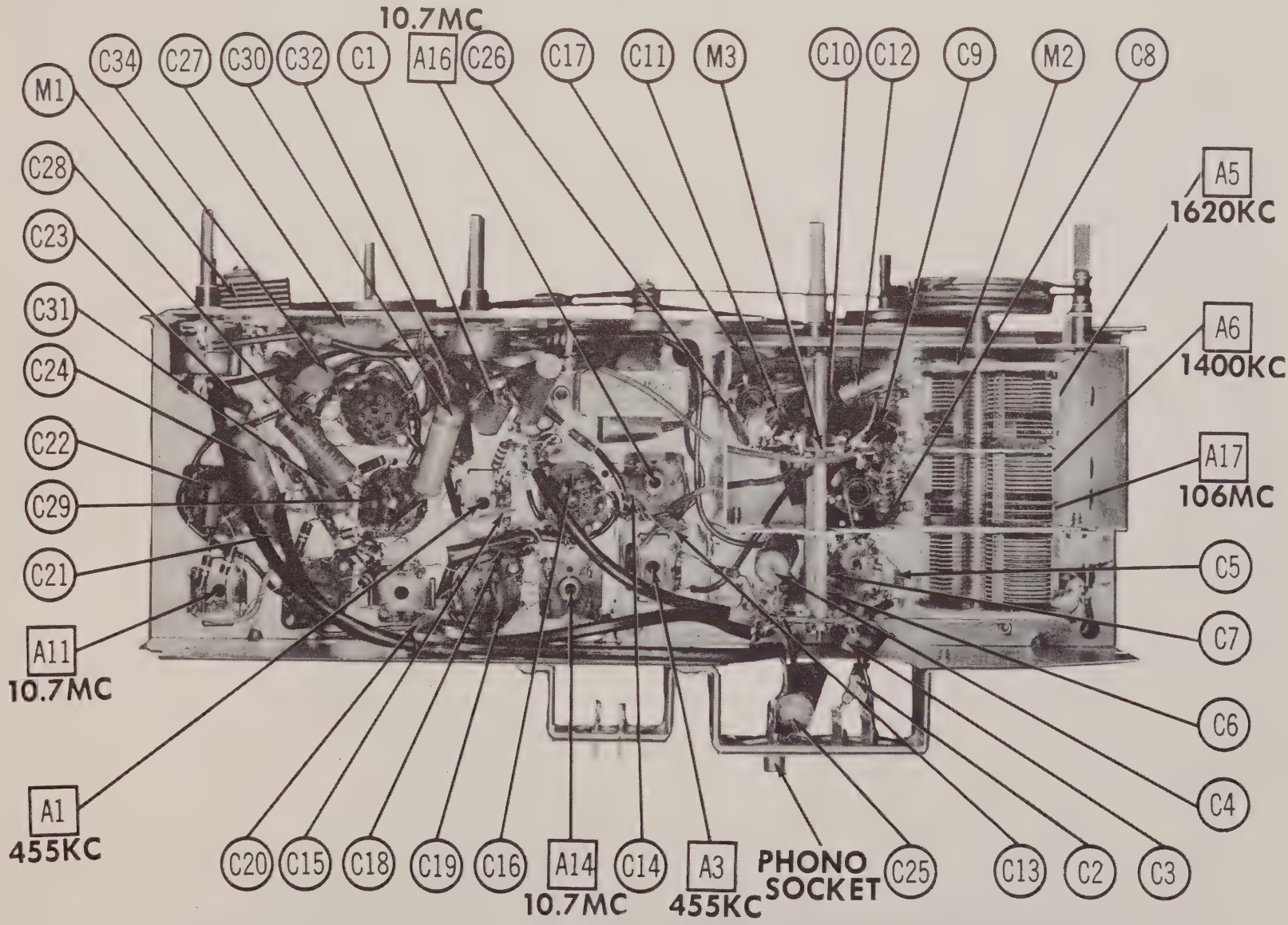
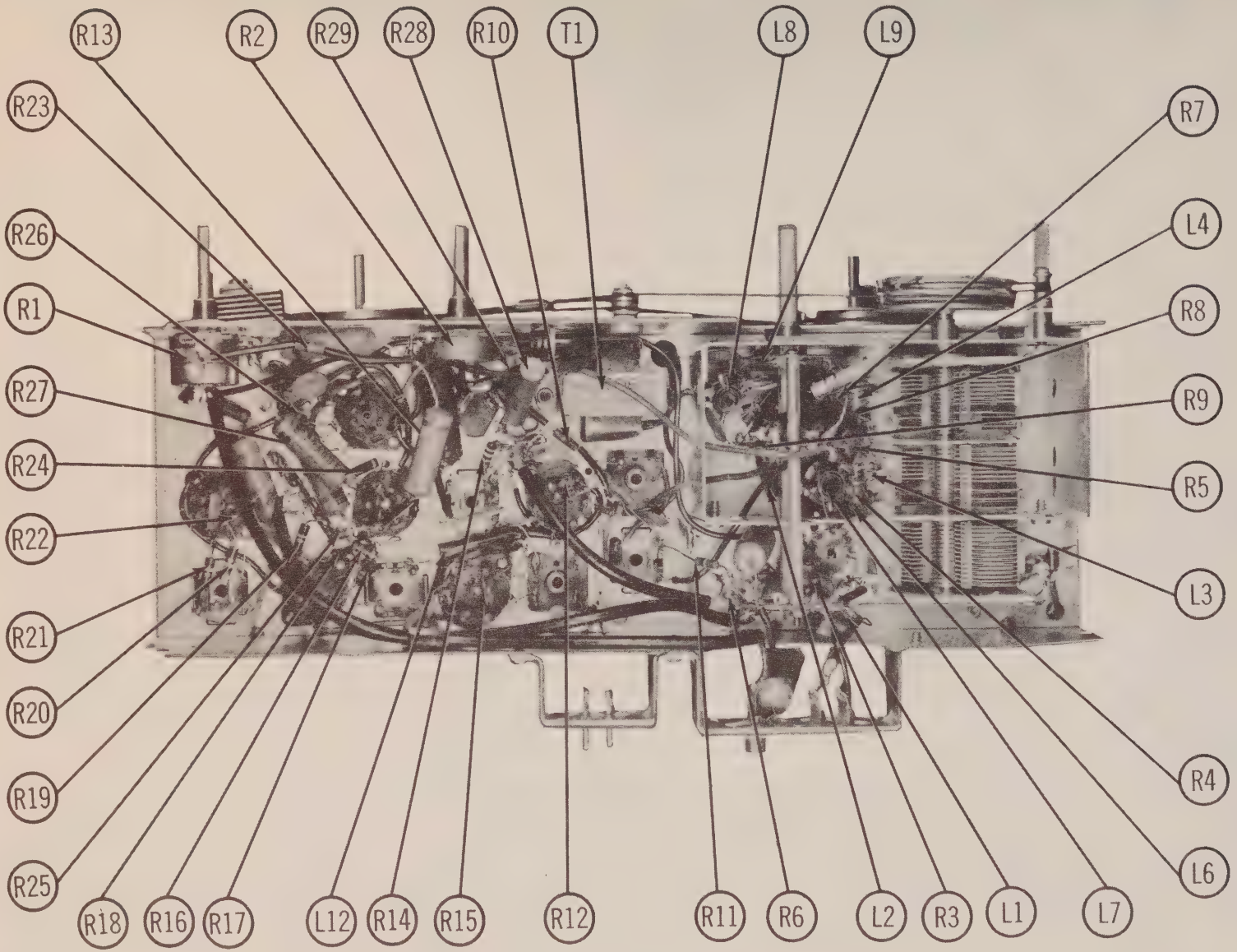
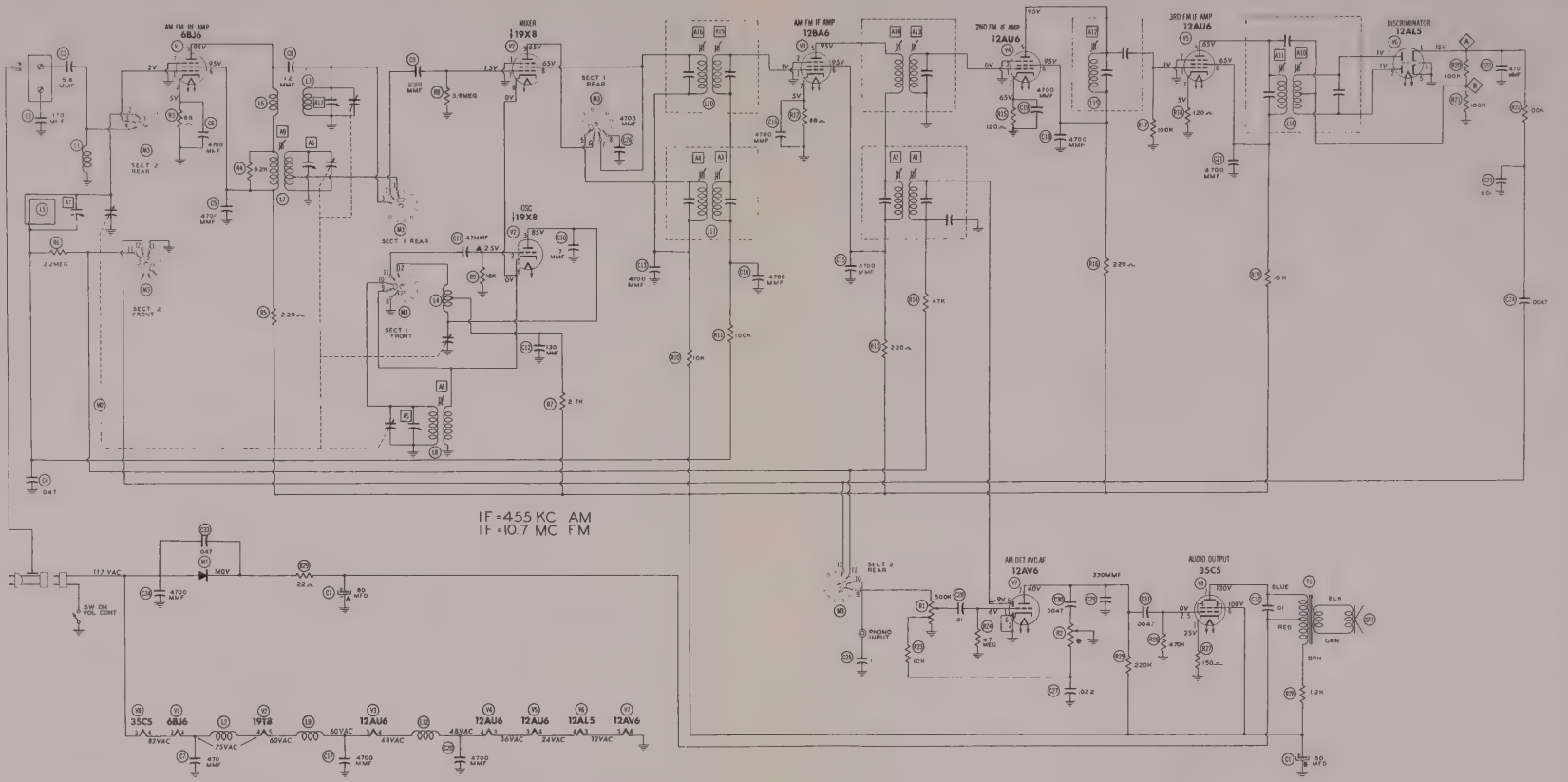


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	▲2.7Meg	68Ω	82Ω	76Ω	†1.4KΩ	†1.4KΩ	0Ω		
V 2	19X8	0Ω	18K Ω	†3.9KΩ	76Ω	60Ω	6Ω	3.9Meg	†11.2KΩ	†11.2KΩ
V 3	12BA6	▲2.8Meg 2.3Meg	0Ω	60Ω	48Ω	†1.4KΩ	†1.4KΩ	68Ω		
V 4	12AU6	.5Ω	0Ω	36Ω	48Ω	†1.4KΩ	†1.4KΩ	120Ω		
V 5	12AU6	100KΩ	0Ω	36Ω	24Ω	†11.2KΩ	†11.2KΩ	120Ω		
V 6	12AL5	200KΩ	100KΩ	12Ω	24Ω	0Ω	0Ω	100KΩ		
V 7	12AV6	4.7Meg	0Ω	12Ω	0Ω	▲550KΩ	0Ω	†220KΩ		
V 8	35C5	150Ω	470KΩ	117Ω	82Ω	470KΩ	†1.2KΩ	†280Ω		

† MEASURED TO OUTPUT OF M1
▲ MEASURED IN AM POSITION
ALL MEASUREMENTS IN FM UNLESS NOTED
▲ TAKEN WITH VACUUM TUBE VOLTMETER

* SEE PARTS LIST FOR VALUE & APPLICATION

FUNCTION SWITCH SHOWN IN PHONO POSITION. SW. SEQUENCE
1. PHONO
2. AM
3. FM

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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206-9

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer, turn tuning capacitor fully closed and set pointers to last reference mark at low frequency end of dial.
Set tone control to mid-position.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	455KC (400~Mod.)	AM	Quiet point at high freq. end of dial.	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	High side to lug 4 of RF Coil (next to grounded lug 5). Low side to chassis.	"	"	"	"	A3, A4	"
3.		Loop	1620KC	"	1620KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	"	1400KC	"	A6, A7	"
5.		"	600KC	"	600KC	"	A8, A9	Shunt 10KΩ resistor across RF section of tuning gang. Adjust A8 for maximum output while rocking tuning gang. Remove the 10KΩ resistor and adjust A9 for maximum output. Repeat steps 4 and 5 until no further increase in output is noted.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set volume control to minimum volume position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 1 (grid) of 12AU6 (V5). Low side to chassis.	10.7MC (Unmod.)	FM	Quiet point near low frequency end of dial.	DC probe to point (A). Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A11	Adjust for maximum deflection.
8.	"	High side to pin 1 (grid) of 12AU6 (V4). Low side to chassis.	"	"	"	DC probe thru 220KΩ to pin 1 of V5. Common to chassis.	A12	Keep exposed lead of VTVM very short and dress leads away from input circuit. Adjust for maximum deflection. Attenuate generator to maintain 1 volt at VTVM.
9.	"	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A13, A14	Adjust for maximum deflection, maintaining 1 volt attenuation. If necessary for accurate adjustment shunt winding not being peaked with a 680Ω resistor.
10.	"	High side to stator of FM, RF section of tuning gang. Low side to chassis.	"	"	"	"	A15, A16	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Set volume control to minimum volume position.
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 1 (grid) of 12AU6 (V5). Low side to chassis.	10.7MC (Unmod.)	FM	Quiet point near low frequency end of dial.	Vert. Amp. to point (A). Low side to chassis.	A10, A11	Adjust A10 so that 10.7MC occurs at center of crossover lines as in Fig. 1. Adjust A11 for maximum amplitude and straightness of crossover lines.
7.	"	High side to pin 1 (grid) of 12AU6 (V4). Low side to chassis.	"	"	"	Vert. Amp. thru 220KΩ to pin 1 of V5. Low side to chassis.	A12	Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
8.	"	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A13, A14	"
9.	"	High side to stator of FM RF Section of tuning gang. Low side to chassis.	"	"	"	"	A15, A16	"

Continue alignment with Step 11.

FIG. 1

FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	270Ω Carbon Resistor	Across FM antenna terminals with 270Ω in each lead.	90MC (Unmod.)	FM	90MC	DC probe thru 220KΩ to pin 1(grid) of 12AU6 (V5). Common to chassis.	L4	Connect VTVM using short leads. Dress the leads away from input circuit. Compress or expand L4 for maximum deflection.
12.	"	"	106MC	"	106MC	"	A17	Adjust for maximum deflection.
13.	"	"	90MC	"	90MC	"	L3	Compress or expand L3 for maximum deflection. Repeat steps 12 and 13 until no further increase is noted.
14.	"	"	100MC	"	100MC	"	L1	Compress or expand L1 for maximum deflection.

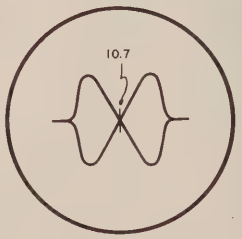


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		RCA Victor PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BJ6	6BJ6	7CM	
V2	Converter	19X8	19X8	9AK	
V3	1stFM-AM IF Amp.	12BA6	12BA6	7BK	
V4	2ndFM-AM IF Amp.	12AU6	12AU6	7BK	
V5	3rdFM IF Amp.	12AU6	12AU6	7BK	
V6	FM Detector	12AL5	12AL5	6BT	
V7	AM Detector-AVC AF Amplifier	12AV6	12AV6	7BT	
V8	Audio Output	35C5	35C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

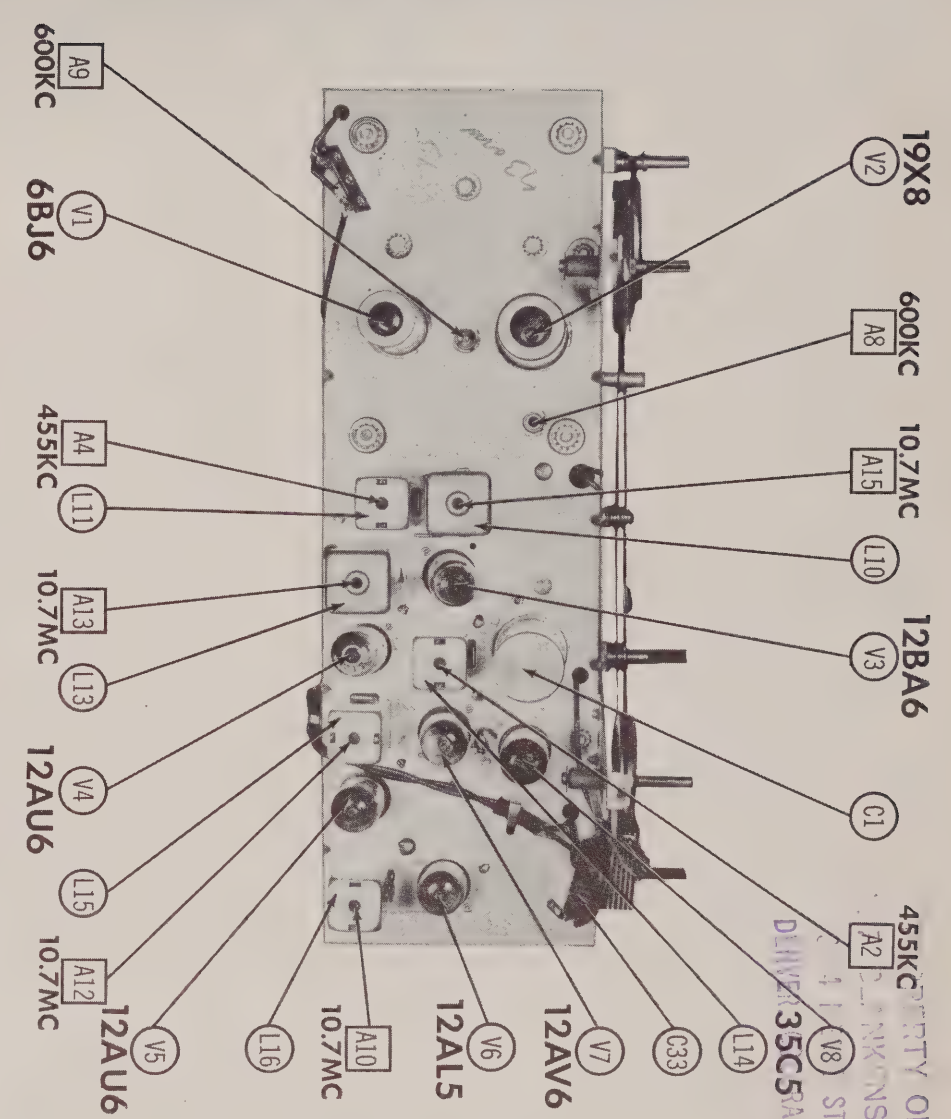
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■80	150	73520	AFH2-19		XB004		FP216	TVL-2442	
B	▲50	150								
C2	5.6		70997				NP0K-5R6			
C3	470	500	39644	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C4	.047	200	73558	P288-047	DF-503	PJ285		PT4147	2TM-S47	
C5	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C6	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C7	470	500	76992	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C8	12		33380		TCZ-12		NP0K-120			
C9	220	500	39636		TCZ-220				5TCC-T22	
C10	7		77530				N080-331-070			
C11	47		77531		TCZ-47		NP0L-470		5TCC-Q47	
C12	130		77532		TCN-130		N750L-131			
C13	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C 14	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C15	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C16	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C17	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C18	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C19	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C20	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C21	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C22	470	500	76992	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C23	.001	200	77533	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C24	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C25	.1	400	73551	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C26	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C27	.022	200	73562	P488-022		PTE4S22		PT4122	4TM-S22	
C28	.01	200	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C29	330		75792	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C30	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C31	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C32	.01	600	73594	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C33	.047	400	75071	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C34	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	77515	Q13-133X	AT-78	BT-66-S	UT-427	Volume-Tapped@100KΩ
B	Shaft		Not Req.	Not. Req.	FS-3	Not Req.	Not. Req.	Attach to R1A.
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A.
R2A	*	½	77516	Q11-143	AG-85-S	B-98	U-82	Tone.
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A.

* This control may vary from 2 Meg. (Minimum) to 50 Meg.).

CHASSIS—TOP VIEW



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PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R3	68Ω	1/2	503068	BTS-68	
R4	8200Ω	1/2	503282	BTS-8200	
R5	220Ω	1/2	503122	BTS-220	
R6	2.2Meg	1/2	503522	BTS-2.2Meg	
R7	2700Ω	1/2	503227	BTS-2700	
R8	3.9Meg	1/2	503539	BTS-3.9Meg	
R9	18KΩ	1/2	503318	BTS-18K	
R10	10KΩ	1/2	503310	BTS-10K	
R11	100KΩ	1/2	503410	BTS-100K	
R12	68Ω	1/2	503068	BTS-68	
R13	220Ω	1/2	503122	BTS-220	
R14	47KΩ	1/2	503347	BTS-47K	
R15	120Ω	1/2	503112	BTS-120	
R16	220Ω	1/2	503122	BTS-220	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R17	100KΩ	1/2	503410	BTS-100K	
R18	120Ω	1/2	503112	BTS-120	
R19	10KΩ	1/2	503310	BTS-10K	
R20	100KΩ	1/2	502410	BTS-100K	
R21	100KΩ	1/2	502410	BTS-100K	
R22	100KΩ	1/2	503410	BTS-100K	
R23	10KΩ	1/2	503310	BTS-10K	
R24	4.7Meg	1/2	503547	BTS-4.7Meg	
R25	220KΩ	1/2	503422	BTS-220K	
R26	470KΩ	1/2	503447	BTS-470K	
R27	150Ω	1/2	503115	BTS-150	
R28	1200Ω	4	76348	1 3/4A-1200	
R29	22Ω	1/2	503022		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	3KΩ	3.3Ω	260Ω tap ⓐ 12Ω	.6Ω	77511 (970608-10)	A-3336 ①	A-3031 ①			

① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5 1/4"	PM	3.3Ω	77539 (971933-1)	ST-803 Mod. P525-V	52A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA Victor PART No.	MILLER PART No.	MEISSNER PART No.	NOTES
L1	FM Ant. Coil	0Ω		77538	4604		1.5 Microhenries
L2	Fil. Choke	1.9Ω		77535	4612		11 Microhenries
L3	FM RF Coil	0Ω		77536			
L4	FM Osc.Coil	0Ω		77537			Tapped
L5	AM Loop Ant.	1.6Ω		77543			Includes back assembly complete with power cord and 3-30MMF trimmer capacitor
L6	RF Choke	2.4Ω		77534	4624		15.2 Microhenries
L7	AM RF Coil	70Ω	4Ω	77525		14-1076	Secondary tapped ⓐ 1.5Ω
L8	AM Osc.Coil	2.2Ω	6Ω	77526	71-Osc.	14-1077	
L9	Fil.Choke	1.2Ω		77535	4612		11 Microhenries
L10	1st.FM IF	.3Ω	.3Ω	77514	1451 *	16-3471	
L11	1st.AM IF	6Ω	6Ω	76335	12-C1	16-6758	
L12	Fil. Choke	1.2Ω		77535	4612		11 Microhenries
L13	2nd.FM IF	1Ω	.5Ω	77513	1451 *	16-3472	
L14	2nd.AM IF	7.5Ω	7.5Ω	76328	12-C6	16-6770	
L15	3rd.FM IF	1.3Ω		77512	1463 †	16-3487 †	Includes 33MMF Capacitor
L16	Discriminator	.9Ω	1Ω CT	77511	1464		

* Drill one new mounting hole.
† Detune unused section, add 33MMF capacitor externally.

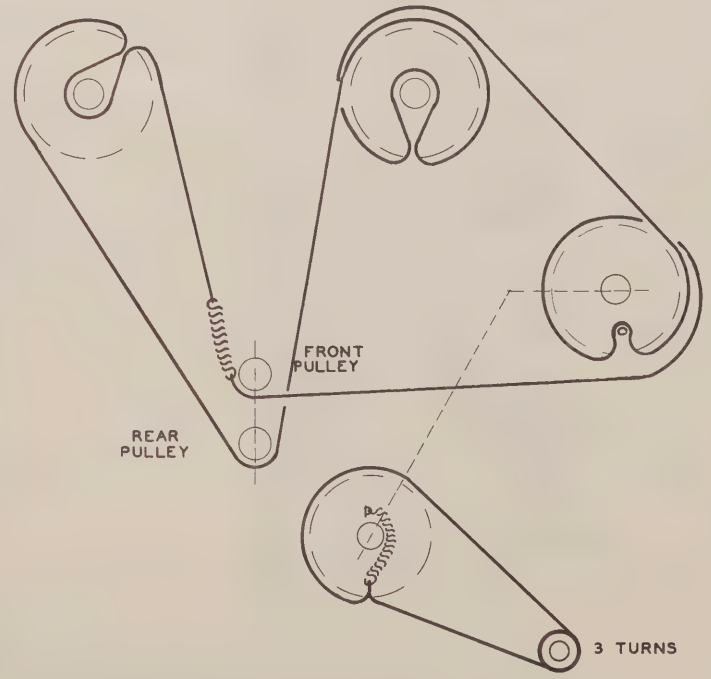
SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA RCA Victor PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.061A	77519 (940267-6)	NC5	5M1	1004A	6S100	100

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M2	Tuning Capacitor	77520	20-436MMF, 26-257MMF, 23-150MMF.
M3	Function Selector	77524	
A7	Trimmer Capacitor	77544	3-30MMF (AM Ant. Adj.)
	Back	77543	Includes loop, trimmer capacitor, and power cord.
	Cabinet	Y2467	Maroon plastic less "RCA Victor" emblem and function decal.
	Knob	77548	Function Selector.
	Knob	77547	Tuning control, tone control, or volume control & off-on selector.
	Pointer	77541	Station selector-AM
	Pointer	77540	Station selector-FM



DIAL CORD DRIVE

PHOTOFACT* Folder

*TRADE MARK

RCA VICTOR MODELS 17-T-301, U, 17-T-302, U, 17-T-310, U (Ch. KCS78, B)

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MODEL 17-T-301

RCA VICTOR MODELS 17-T-301, U, 17-T-302, U, 17-T-310, U (Ch. KCS78, B)

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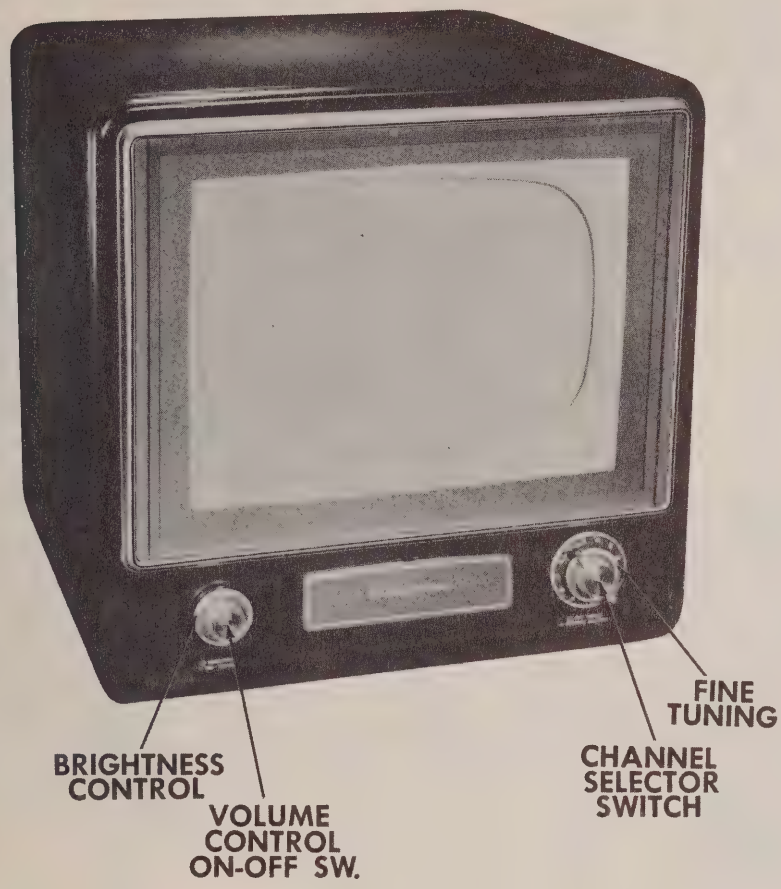

RCA VICTOR MODEL 17-T-301

TRADE NAME	RCA Victor Model 17-T-301,-301U, 17-T-302, -302U, 17-T-310, -310U (Ch.KCS78, KCS78B)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	Television Receiver
TUBES	Twenty-two

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.98 Amp @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13 , Video IF 45.75MC, Sound IF 41.25MC (Intercarrier).

INDEX

Alignment Instructions ..... 5 thru 8
Disassembly Instructions 23
Horizontal Sweep Circuit Adjustments 21
Parts List and Descriptions ..... 15 thru 18
Photographs
Cabinet-Rear View 21
Capacitor and Alignment Identification 4, 9
Chassis-Top View 3
High Voltage Compartment 22
RF Tuner 12, 22
Photographs (Cont)
Resistor and Inductor Identification 13, 20
Resistance Measurements 11
Servicing in the Field 23
Schematic (Alternate Tuner) 24
Schematic (TV) 2
Trouble Shooting Aids 14, 19
Tube Failure Check Chart 10
Tube Placement Chart (Bottom View) 11
Tube Placement Chart (Top View) 10

RCA VICTOR MODELS 17-T-301, U, 17-T-302, U, 17-T-310, U (Ch. KCS78, B)

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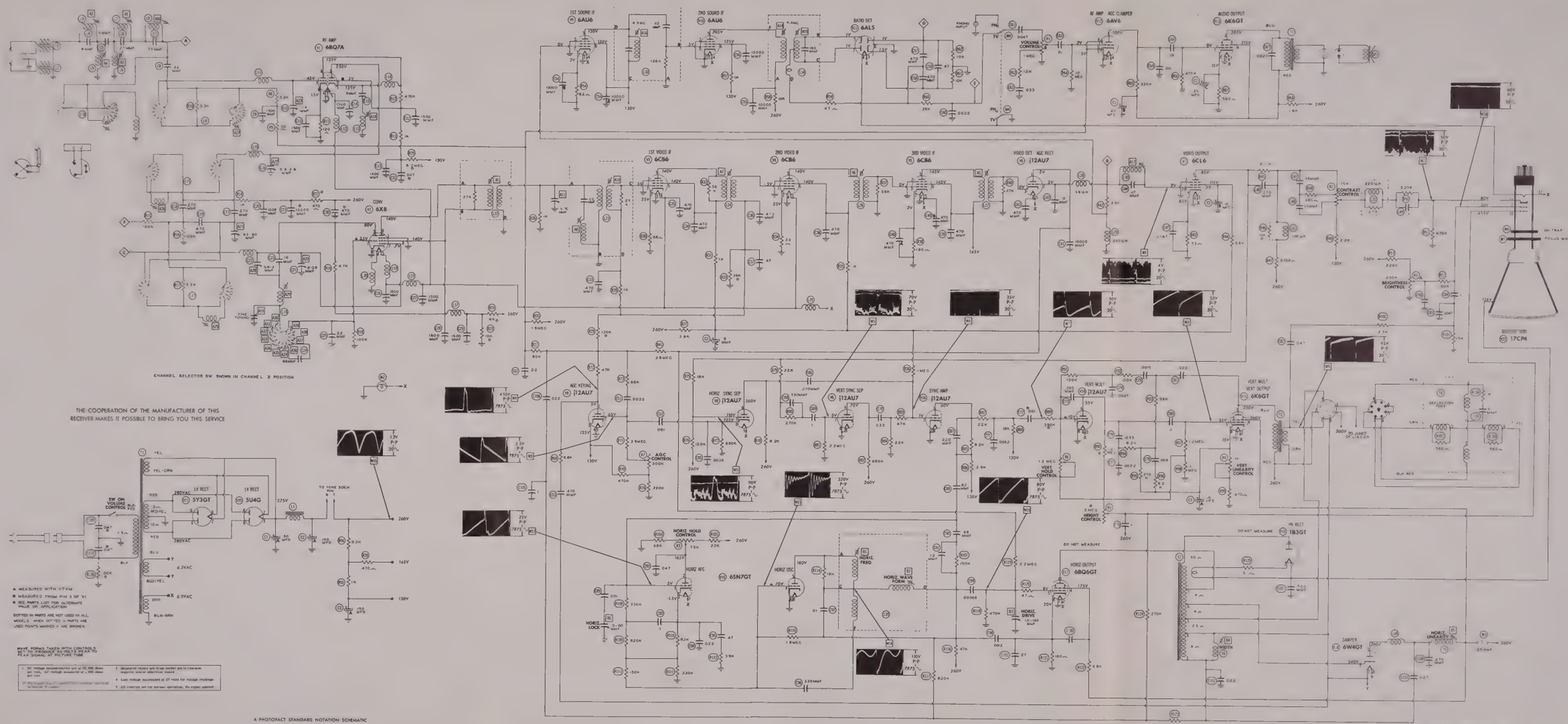
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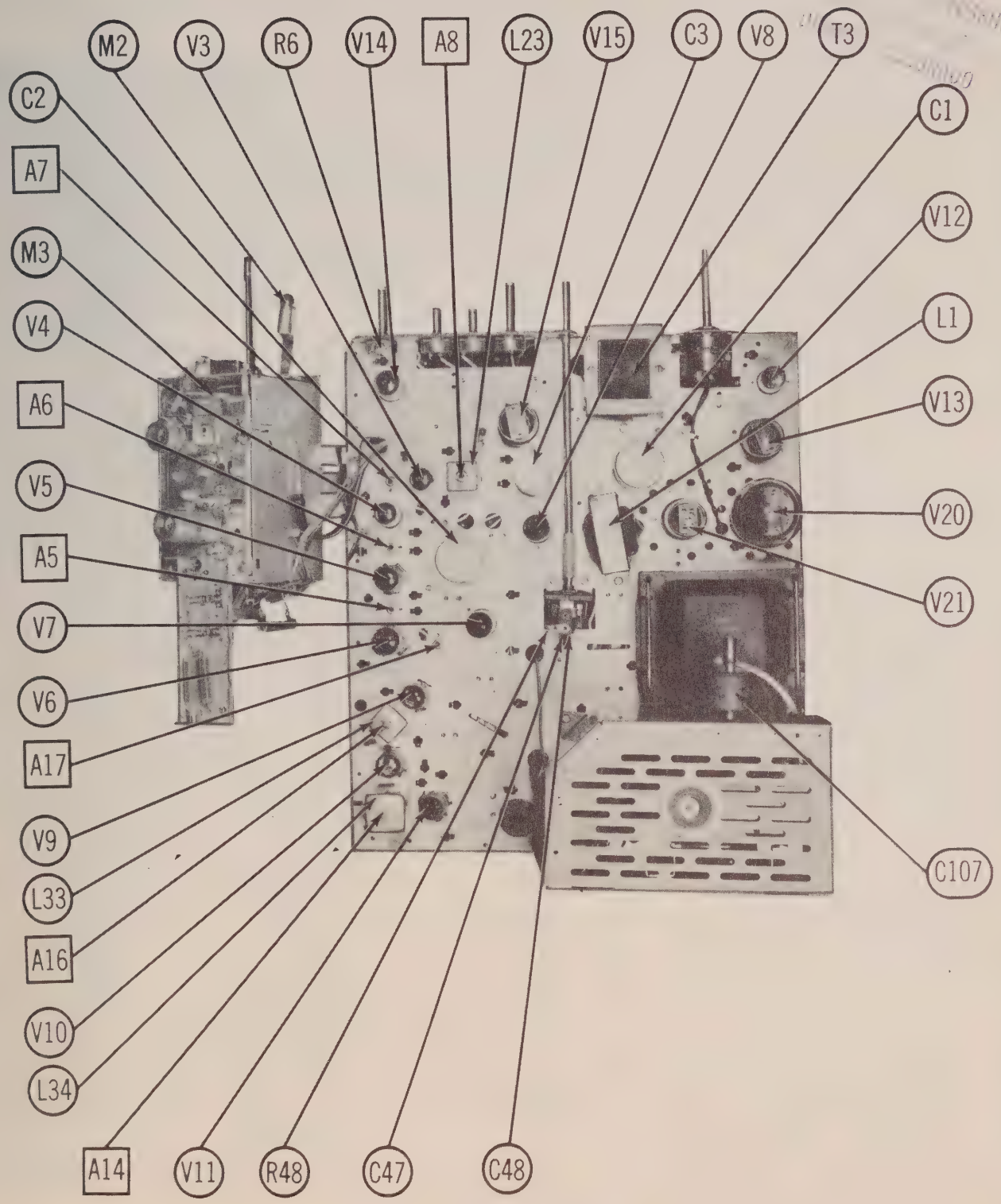
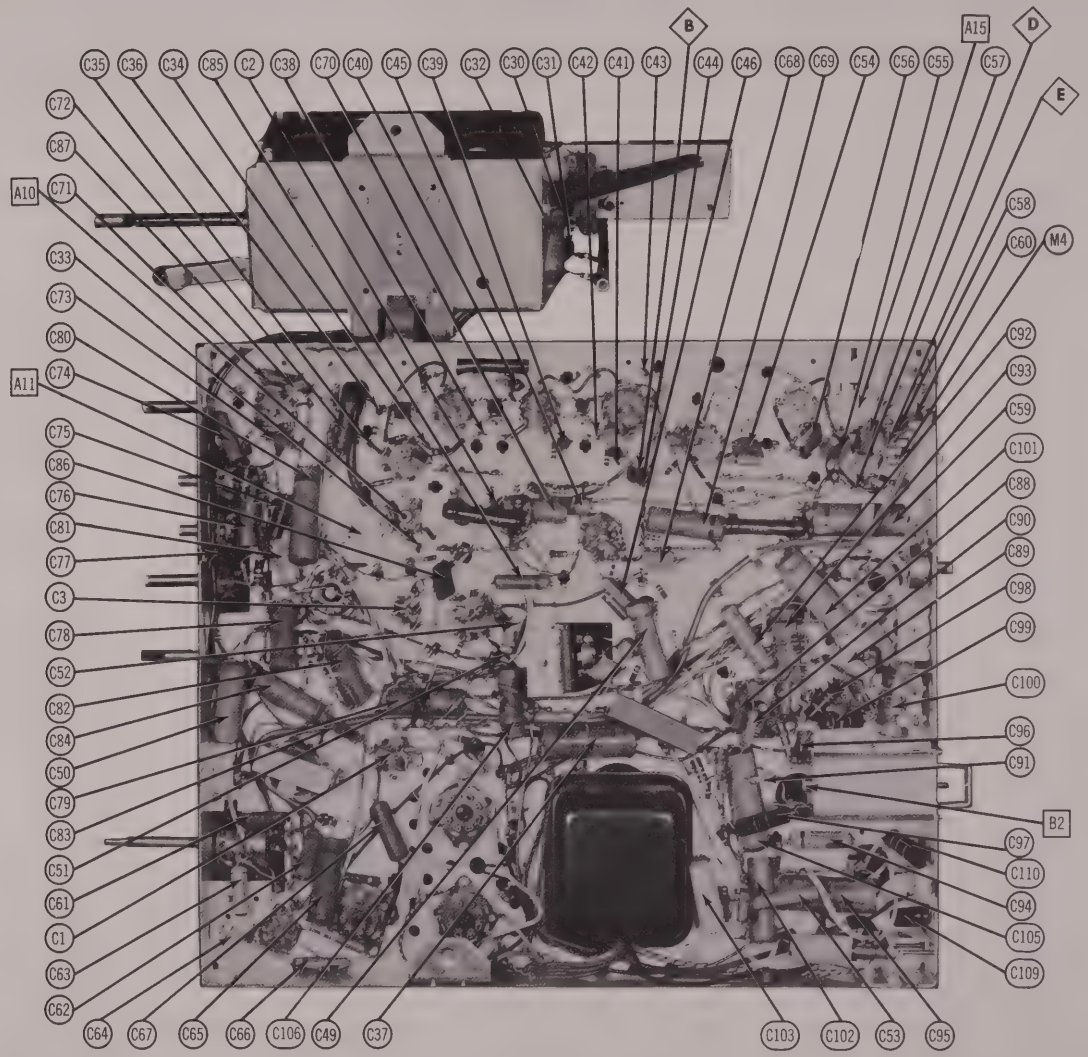
1ST SOUND IF 6AU6
2ND SOUND IF 6AU6
RATIO DET 6AL5
AF AMP AGC CLAMPER 6AV6
AUDIO OUTPUT 6K6GT
CONV 6X8
1ST VIDEO IF 6CB6
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
VIDEO DET AGC RECT 1/2AU7
VIDEO OUTPUT 6CL6
CONTRAST CONTROL
BRIGHTNESS CONTROL
AGC KEYING 1/2AU7
HORIZ SYNC SEP 1/2AU7
VERT SYNC SEP 1/2AU7
SYNC AMP 1/2AU7
VERT MULT 1/2AU7
VERT MULT VERT OUTPUT 6K6GT
VERT LINEARITY CONTROL
VERT HOLD CONTROL
VERT HEIGHT CONTROL
AGC CONTROL
HORIZ HOLD CONTROL
HORIZ AFC 65N7GT
HORIZ OSC
HORIZ FREQ
HORIZ WAVE FORM
HORIZ OUTPUT 6BQ6GT
HORIZ DRIVE
HV RECT 1B3GT
DAMPER 6W4GT
HORIZ LINEARITY
WIDTH
17CP4
DEF. YOKE
FOCUS MAGNET
ION TRAP
LV RECT 5Y3GT
LV RECT 5U4G
SW ON VOLUME CONTROL
TO TONE SOCK
CHANNEL SELECTOR SW SHOWN IN CHANNEL 2 POSITION
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURED WITH VTVM
B MEASURED FROM PIN 3 OF V1
C SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED 'A' PARTS ARE USED POINTS MARKED + ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements are to 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2 Voltage measurements in CT mode for voltage readings between 'Y' leads.
3 Measured values are from socket pin to ground negative meter side/value stated.
4 Line voltage maintained at 117 volts for voltage readings.
5 All controls set for normal operation, No signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1955

RCA VICTOR MODELS 17-T-301, U, 17-T-302, U, 17-T-310, U (Ch. KCS78, B)

RCA VICTOR MODELS 17-T-301, U, 17-T-302, U, 17-T-310, U (Ch. KCS78, B)



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V16.

ANTENNA MATCHING UNIT ALIGNMENT

The antenna matching unit is properly aligned at the factory. The RF unit is aligned with a particular antenna matching unit in place. If a new antenna unit is installed, the RF unit should be realigned. Alignment should not be attempted without the proper alignment facilities.
Disconnect the lead from the FM trap, L8, to the channel selector switch.
Use a short jumper to connect point ⟨A⟩ on the matching unit through a .001MFD capacitor to pin 1, grid, of 6CB6 (V4).
Remove 6CB6, V3, from its socket.
Cover of the matching unit must be in place during alignment.
Connect the ends of a 1000Ω potentiometer across a 7.5 volt battery capable of withstanding considerable current drain. Connect the positive terminal to chassis and the potentiometer arm to the junction of R28 and R29.
Set the potentiometer arm to obtain -5 volts at this point.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	Not Used.	45.75MC (400∿Mod)	Any	Vert. amp to point ⟨B⟩ Low side to chassis.	A1	Set oscilloscope gain to maximum and adjust A1 for MINIMUM 400∿ response.
2.	"	"	"	41.25MC (400∿Mod)	"	"	A2	Adjust for MINIMUM 400∿ response on scope.
3.	"	"	50MC (10MC Swp)	50MC 52MC 53MC	"	Vert. amp thru detector probe (Fig. 1) to point ⟨A⟩ Low side to chassis.	A3, A4	Remove the .001MFD capacitor (See instructions above) from point A and connect a 300Ω carbon resistor from point A to chassis using short leads. Adjust A3 and A4 to obtain response curve as in Fig. 2. Repeat steps 1, 2 and 3 until no further improvement is made. Remove the 300Ω resistor and the detector probe. Restore the connection between L8 and the channel switch. Replace V3.

VIDEO IF ALIGNMENT FOR RECEIVERS USING VHF TUNER KRK11-B

Connect bias supply as under Antenna Matching Unit Alignment and adjust for -5 volts.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to terminal "A" of L23. Low side to chassis.	Not Used.	44.5MC	Any not used locally.	Use VTVM. DC probe to point ⟨B⟩. Common to chassis.	A5	Adjust for maximum deflection. Attenuate generator to maintain not more than 3 Volt indication on VTVM.
5.	"	"	"	45.5MC	"	"	A6	"
6.	"	"	"	43.0MC	"	"	A7	"
7.	"	"	"	47.25MC	"	"	A8	Adjust for MINIMUM deflection.
8.	.0015MFD Ceramic Capacitor	High side thru .0015 MFD to point ⟨C⟩ Low side to tuner chassis. Use very short leads.	43MC (10MC Swp)	42.5MC 45.75MC 47.25MC	4	Vert. amp of scope thru detector (Fig. 1) to pin 5 (Plate) of 6CB6 (V3). Low side to chassis.	A9, A10, A11	Set AGC control fully clockwise. Preset A11 to minimum capacity. Clip 330Ω resistors across primaries of L26 and L27. Connect a 180Ω carbon resistor from plate to screen of 6CB6 (V3). Adjust A9 and A10 for maximum gain with 45.75MC at 70% response as in Fig 3. Attenuate generator to maintain .3Volt peak to peak response on scope. Adjust A11 to place 42.5MC at 70% on response curve.
9.	"	"	"	42.5MC 45.0MC 45.75MC 46.5MC	"	Vert. amp to point ⟨B⟩ Low side to chassis.		Disconnect the 180Ω and the two 330Ω resistors. Adjust output of generator for 3 Volts peak to peak on scope. Retouch A5, A6 and A7. for response similar to Fig. 4.

VIDEO IF ALIGNMENT FOR RECEIVERS USING UHF-VHF TUNER KRK12

Connect bias supply as under Antenna Matching Unit Alignment and adjust for -5 volts.
Turn the AGC control fully clockwise.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.0015MFD Ceramic Capacitor	High side to junction of 1N82 and the IF grid transformer. Low side to tuner chassis. Use short leads.	Not Used.	44.5MC	Any not used locally.	Use VTVM. DC probe to point ⟨B⟩ Common to chassis.	A5	Adjust for maximum deflection. Attenuate generator to maintain not more than 3 Volt indication on VTVM.
5.	"	"	"	45.5MC	"	"	A6	"
6.	"	"	"	43.0MC	"	"	A7	"
7.	"	"	"	47.25MC	"	"	A8	Adjust for MINIMUM deflection.
8.	"	"	43MC (10MC Swp)	43.25MC 45.75MC	5	Vert. amp of scope thru detector (Fig. 1) to pin 5 (Plate) of 6CB6 (V3).	A12, A10, A13, A11	Connect a 180Ω carbon resistor from plate to screen of V3. Clip 330Ω resistors across primaries of L26 and L27. Preset A11 at minimum capacity. Adjust A12 and A10 for maximum gain at 43.5MC with 45.75MC at 70% response. Adjust A11 for proper band width. Adjust A13 for maximum gain. Retouch A10, A11 and A12, if necessary, for response similar to Fig. 3.
9.	"	"	"	42.5MC 45.0MC 45.75MC 46.5MC	"	Vert. amp to point ⟨B⟩ Low side to chassis.		Disconnect the 180Ω and the two 330Ω resistors. Adjust output of generator for 3 Volts peak to peak on scope. Retouch A5, A6 and A7 for response similar to Fig. 4.

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ALIGNMENT INSTRUCTIONS (CONT.)

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to pin 1 (grid) of 6AU6 (V9). Low side to chassis.	4.5MC (Unmod.)	Any not used locally.	DC probe to point (D). Common to chassis.	A14	Adjust for maximum deflection. Attenuate generator output for 6 volts at VTVM.
11.	"	"	"	"	DC probe to point (E). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 10 and 11 making final adjustments with generator output set to produce 6 volts on VTVM at point (D).
12.	"	"	"	"	DC probe to point (D). Common to chassis.	A16	Adjust for maximum as in Step 10.

4.5MC TRAP ALIGNMENT

Short pin 1 (grid) of 6CB6 (V5) to chassis to prevent noise from masking the output indication.

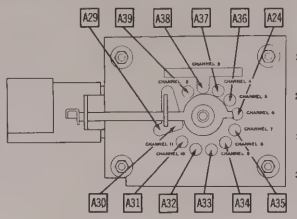
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	1000Ω Resistor	High side thru 1000Ω to pin 2 (grid) of V6A. Low side to chassis.	Not used	4.5MC (400~Mod)	Any	Vert. Amp. thru detector (Fig. 1) to pin 6 (plate) of 6CL6 (V7). Low side to chassis.	A17	Set generator output to approximately .5 volts. Adjust A17 for MINIMUM 400~ indication.

If receiver employs an RCA KRK11-B VHF tuner continue alignment with Step 14.
If receiver employs an RCA KRK12 UHF-VHF tuner proceed to Step 34.

KRK11-B TUNER ALIGNMENT

An RF unit which is operative and requires only minor touch-up adjustments will require no presetting of adjustments. Where complete alignment is necessary make the following pre-adjustments:
Set A23 so that the screw head projects approximately 3/8" above chassis. Set A21 1/4 turn from maximum capacity.
Disconnect the link from terminals "A" and "B" of L23 and terminate the link with a 39Ω carbon resistor.
Connect the potentiometer arm of the bias supply to terminal 3 on the tuner. Connect the positive lead to tuner chassis. Adjust bias supply to produce -3.5 volts at AGC terminal of tuner.
Tuner alignment as outlined below requires the use of a heterodyne frequency meter.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	.0015MFD	Remove 6X8 (V2) from socket and twist one end of small piece of wire around pin 7. Replace tube in socket and connect high side of generator to free end of wire. Low side to chassis.	Not used	43.5MC (400~Mod)	2	Vert. Amp. to point (F). Low side to chassis.	A18	Adjust for MINIMUM 400~ indication on scope. Remove the wire lead from pin 7 of V2 and replace V2 tube and shield.
15.		RF input of heterodyne frequency meter to end of insulated wire inserted in hole in tuner provided for adjustment of A21.	"	Set freq. meter to 227MC	8	Not used	A19	Set fine tuning control 30 degrees clockwise from mechanical center of its range. Adjust for audible beat on frequency meter.
16.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	183MC (10MC Swp)	181.25MC 185.75MC	"	Vert. Amp. to point (F). Low side to chassis.	A20, A21 A22, A23	Set A9 to maximum counter clockwise rotation. Adjust A20, A21, A22 and A23 for response similar to Fig. 5.
17.		Connect frequency meter as in Step 15.	Not used	Freq. Meter to 139MC	6	Not used	A24	Adjust for audible beat on frequency meter.
18.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	"	Vert. Amp. to point (F). Low side to chassis.	A25, A26 A27	Adjust for response similar to Fig. 5.
19.	Turn off all generators, connect VTVM to point (F) of chassis and adjust A28 for -3.5 volts or maximum if less than 3.5 volts.							
20.	Repeat step 18.							
21.	Repeat step 15.							
22.	Repeat step 16.							
23.	If A30 was adjusted in step 22 recheck voltage at point (F) as in Step 19. If original setting of A30 was far off it may be necessary to alternately perform steps 15, 16 and step 19 several times before proper setting is obtained.							
24.		Connect frequency meter as in step 15.	Not used	Freq. meter to 257MC	13	Not used	A29	Adjust for audible beat on freq. meter. Slightly overshoot the adjustment a little more in same direction from original setting then adjust A19 to again obtain audible beat.
25.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (F). Low side to chassis.		Check for response similar to Fig. 5. If markers fall below 80% switch to channel 8 and readjust A20, A21, A22 and A23 as necessary.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
26.		Connect frequency meter as in Step 15.	Not used	Set freq. meter to 227MC	8	Not used		Check for audible beat on freq. meter. If necessary, adjust A19, overshoot the adjustment and correct by adjusting A29.



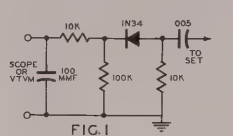


FIG. 1

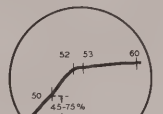


FIG. 2

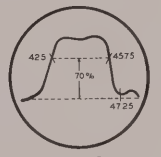


FIG. 3

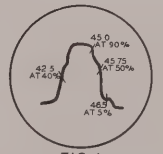


FIG. 4

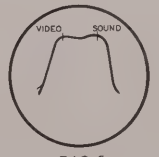


FIG. 5

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
27.		Connect frequency meter as in step 15.	Not Used	Set freq. meter to 139MC	6	Not Used	A24	Adjust for audible beat on freq. meter.
28.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point (F). Low side to chassis.		Check for response as in Fig. 5. If necessary retouch A25, A26 and A27.
29.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"	A9	Adjust A9 clockwise to point where further adjustment causes no change in response curve.
30.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point (F). Low side to chassis.		Check for response as in Fig. 5 and for proper oscillator injection voltage at point (F). If excessive tilt occurs on channel 2, 3 and 4 adjust A23 on channel 2 overshoot the correction of tilt then adjust A27 on channel 6 for maximum amplitude of response between markers. This should produce flat response on low channels if other adjustments, especially A25 are correct.
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
31.	Check channels 7 thru 13 for proper response as in Step 25.							
32.		Connect frequency meter as in step 15.	Not used	Set freq. meter to 257MC	13	Not used		Check for audible beat on frequency meter. Adjust A19 if necessary.
33.		"	"	251MC	12	"	A30	Adjust for audible beat on frequency meter.
				245MC	11		A31	
				239MC	10		A32	
				233MC	9		A33	
				227MC	8		A34	
				221MC	7		A35	
				129MC	6		A24	
				123MC	5		A36	
				113MC	4		A37	
				107MC	3		A38	
				101MC	2		A39	

KRK12 TUNER VHF ALIGNMENT

It is necessary to meter the non-oscillating plate current of the 6S4 voltage control tube. This can be accomplished by use of an adaptor or similar arrangement. The circuit diagram for the adaptor is shown in Fig. 6.
Remove 6S4 from its socket and insert the adaptor plug. Plug 6S4 into adaptor.
Connect 0-50 MA meter to adaptor and turn the switch on.
Remove the tuner cover shield.
Set channel selector midway between channels to disable local oscillator. Some tubes may oscillate even with the tuned circuits disengaged.
As a check, short circuit the spring contacts 12 and 13, nearest the tuner front, with a finger. (Contacts are at zero DC potential). If plate current rises keep finger on contacts while adjusting the oscillator voltage control for 28 MA indication on meter.
Replace tuner cover shield.
The oscilloscope used should have sensitivity of 1 mill watt per inch. If sensitivity is less a suitable preamplifier may be used with the scope.
A heterodyne frequency meter is used while making VHF oscillator adjustments.
To find oscillator frequency for any UHF or VHF channel add 45.75MC to the picture carrier frequency for that channel as listed in the frequency chart.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
34.	None	Couple loosely to antenna terminals	Set sweep to cover channel being aligned. See channel frequency chart.	Set alternately to video and sound carrier frequency of channel being aligned see chart.	2 thru 13	Vert. Amp. to point (G). Low side to chassis.	A40 A41 A42 A43 See Remarks	Ground the AGC line at tuner terminal board. Turn off the adaptor switch, removing plate voltage from oscillator. Adjust for response similar to Fig. 7. Each channel strip adjustment for an individual channel strip has a corresponding adjustment on all other VHF channel strips. Since these adjustments are identical in position and function they are indicated by the same "A" number in the interests of simplification. Adjustments A40, A41 and A42 for each channel strip are accessible through holes in top of tuner as the channel switch is turned to each channel. Adjustment A43 refers to coupling capacitor whose positioning affects bandwidth of response curve.
35.	Remove the ground placed on AGC line in above step. Turn the AGC control fully clockwise. Connect the potentiometer arm of the bias supply to the tuner AGC terminal. Connect the positive lead to the tuner case. Adjust for -5 volts at AGC terminal. Connect the potentiometer arm of a second bias supply to the junction of R28 and R29 and the positive lead to chassis. Adjust for -5 volts at potentiometer arm. Turn the 6S4 adaptor switch on to apply plate voltage to the oscillator. Connection of the heterodyne frequency meter for oscillator adjustment is made as follows: Insert the end of an insulated piece of wire into either of two holes next to the oscillator tube at the right top corner of the tuner. Use care so that wire does not touch any tuned circuits. Connect other end of wire to RF input of the frequency meter.							
36.		Connect frequency meter as above.	Not used	Freq. meter to 257MC	13	Not used	A44	Adjust for audible beat on freq. meter.
37.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (B). Low side to chassis.		Adjust A13 for maximum gain on scope. Adjust A42 for maximum gain and flat-topped curve. Recheck A13 for maximum gain at center of band.
38.		Connect frequency meter as in Step 35.	Not used	Freq. meter to oscillator frequency, channels 12 thru 2 See chart.	12 thru 2	Not used	A44 A42	Adjust A44 on each channel for audible beat on freq. meter. Connect sweep generator and scope as in step 37, set sweep and marker to proper frequencies for each channel and adjust A42, if necessary, for maximum gain and proper response curve.
39.	Direct	High side to point (H) Low side to chassis.	Not used	43.5MC (400~Mod)	Any	Vert. Amp. to point (B). Low side to chassis.	A45	Adjust for MINIMUM 400~ indication on scope.

ALIGNMENT INSTRUCTIONS (CONT.)

KRK12 TUNER UHF ALIGNMENT

Alignment of the UHF portion of the tuner should not be attempted unless the following test equipment is available, in addition to the usual VHF test equipment: A UHF sweep generator covering the frequency range of 470MC to 890MC.
A marker generator of crystal accuracy covering the same frequency range.
Leave 6S4 adaptor connected as under KRK12 Tuner VHF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
40.	10 db attenuator pad	Sweep generator thru attenuator to antenna terminals. Couple UHF marker generator loosely to antenna terminals.	Set sweep to cover channel being aligned. See chart. Use 10MC swp width	Set alternately to video and sound carrier frequency of channel being aligned. See chart.	14 thru 83	Vert. Amp. to point (G). Low side to chassis.	A46, A47 A48	Turn off the adaptor switch, removing plate voltage from oscillator. Ground the AGC line at the tuner terminal board. Adjust for maximum gain, symmetrical response curve centered about the pass band. See Fig. 8 for acceptable variations.

41. Connect both bias supplies and adjust as under Tuner VHF Alignment. Remove the ground from the AGC line. Turn the adaptor switch on to apply plate voltage to the oscillator. Connect the VHF signal generator to point (G) using very short leads. Set generator to 45.75MC for remainder of tuner alignment.

42.	10 db attenuator pad	Sweep generator thru attenuator to antenna terminals. Connect UHF marker generator to point (G), and tuner chassis.	Set sweep to cover channel being aligned. See chart. Use 10MC swp width	Set to video carrier frequency of channel being aligned. See chart.	14 thru 83	Vert. Amp. to point (B). Low side to chassis.	A49	Adjust A49 for channel strip being aligned until 45.75MC and video carrier marker coincide on response curve. Adjust A48 of channel strip being aligned for maximum gain with proper wave shape. Connect VTVM to point (G). Common to chassis. Set oscillator injection adjustment for reading on VTVM between .1 volt and .3 volt on all channel strips.

FM TRAP ADJUSTMENT

Tune in a TV station on which FM interference is noted and adjust A50 to minimize the interference. On some receivers A50 will tune into channels 6 or 5. Care must be used to avoid this possibility as reduced sensitivity on these channels will result.

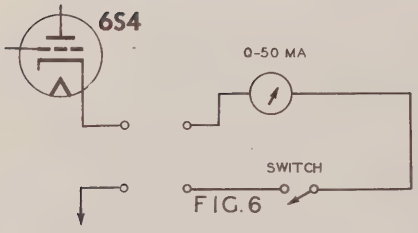


FIG. 6

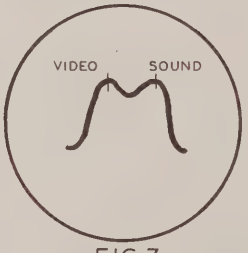


FIG. 7

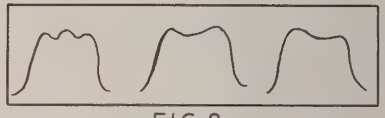
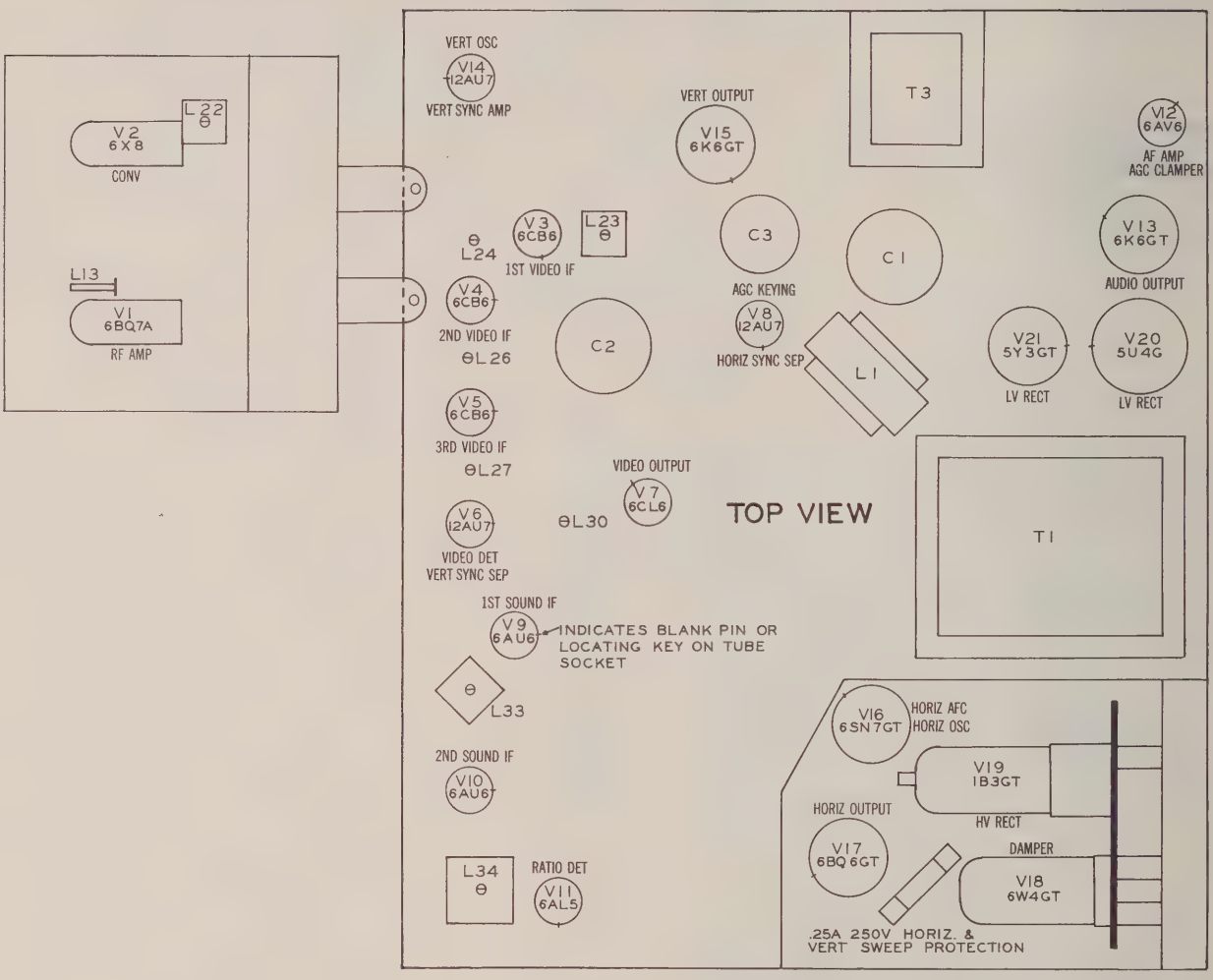


FIG. 8

TELEVISION CHANNEL FREQUENCIES

Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier
2	54-60	55.25	59.75	23	524-530	525.25	529.75	44	650-656	651.25	655.75	64	770-776	771.25	775.75
3	60-66	61.25	65.75	24	530-536	531.25	535.75	45	656-662	657.25	661.75	65	776-782	777.25	781.75
4	66-72	67.25	71.75	25	536-542	537.25	541.75	46	662-668	663.25	667.75	66	782-788	783.25	787.75
5	76-82	77.25	81.75	26	542-548	543.25	547.75	47	668-674	669.25	673.75	67	788-794	789.25	793.75
6	82-88	83.25	87.75	27	548-554	549.25	553.75	48	674-680	675.25	679.75	68	794-800	795.25	799.75
7	174-180	175.25	179.75	28	554-560	555.25	559.75	49	680-686	681.25	685.75	69	800-806	801.25	805.75
8	180-186	181.25	185.75	29	560-566	561.25	565.75	50	686-692	687.25	691.75	70	806-812	807.25	811.75
9	186-192	187.25	191.75	30	566-572	567.25	571.75	51	692-698	693.25	697.75	71	812-818	813.25	817.75
10	192-198	193.25	197.75	31	572-578	573.25	577.75	52	698-704	699.25	703.75	72	818-824	819.25	823.75
11	198-204	199.25	203.75	32	578-584	579.25	583.75	53	704-710	705.25	709.75	73	824-830	825.25	829.75
12	204-210	205.25	209.75	33	584-590	585.25	598.75	54	710-716	711.25	715.75	74	830-836	831.25	835.75
13	210-216	211.25	215.75	34	590-596	591.25	595.75	55	716-722	717.25	721.75	75	836-842	837.25	841.75
14	470-476	471.25	475.75	35	596-602	597.25	601.75	56	722-728	723.25	727.75	76	842-848	843.25	847.75
15	476-482	477.25	481.75	36	602-608	603.25	607.75	57	728-734	729.25	733.75	77	848-854	849.25	853.75
16	482-488	483.25	487.75	37	608-614	609.25	613.75	58	734-740	735.25	739.75	78	854-860	855.25	859.75
17	488-494	489.25	493.75	38	614-620	615.25	619.75	59	740-746	741.25	745.75	79	860-866	861.25	865.75
18	494-500	495.25	499.75	39	620-626	621.25	625.75	60	746-752	747.25	751.75	80	866-872	867.25	871.75
19	500-506	501.25	505.75	40	626-632	627.25	631.75	61	752-758	753.25	757.75	81	872-878	873.25	877.75
20	506-512	507.25	511.75	41	632-638	633.25	637.75	62	758-764	759.25	763.75	82	878-884	879.25	883.75
21	512-518	513.25	517.75	42	638-644	639.25	643.75	63	764-770	765.25	769.75	83	884-890	885.25	889.75
22	518-524	519.25	523.75	43	644-650	645.25	649.75								

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V20, V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V22
Has pic, no sound-V9, V10, V11, V12, V13
Overloaded picture-V8, V12

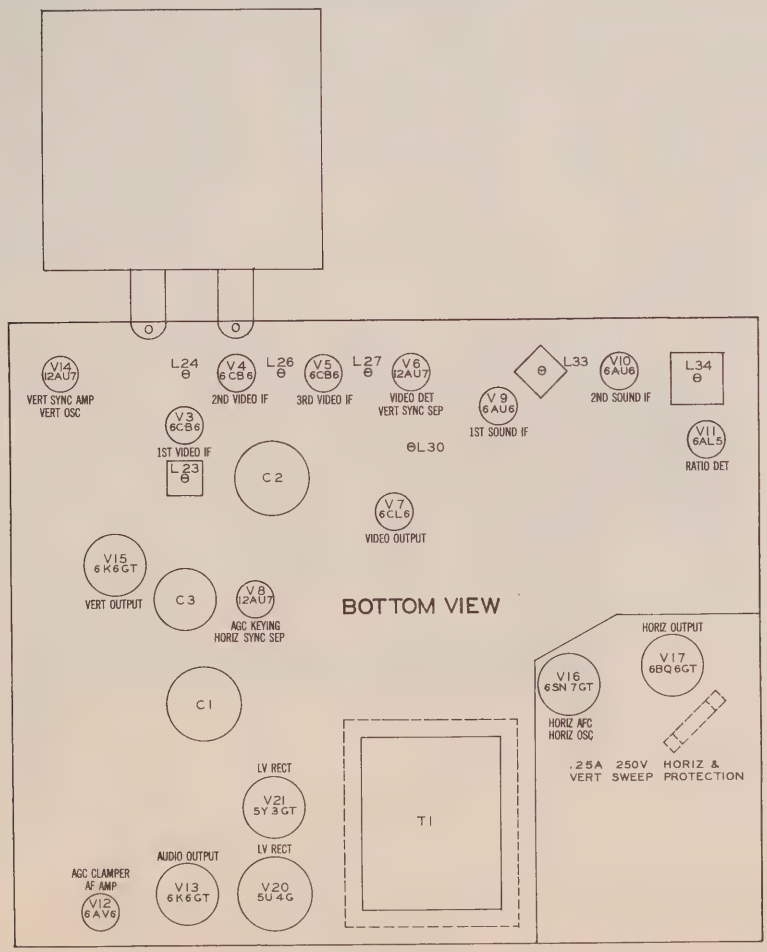
SYNC FAILURE
No vert. sync.-V14
No horiz. sync.-V14, V16
No vert. or horiz. sync.-V6, V8, V14

SWEEP FAILURE
No raster, has sound-V16, V17, V18, V19, V22 Fuse (M1)
No vertical deflection-V14, V15
Poor vert. linearity or foldover-V14, V15
Poor horiz. linearity or foldover-V16, V17, V18
Narrow picture-V16, V17, V18, V19, V20, V21
Vert. off freq.-V14
Horiz. off freq.-V14, V16

RESISTANCE MEASUREMENTS

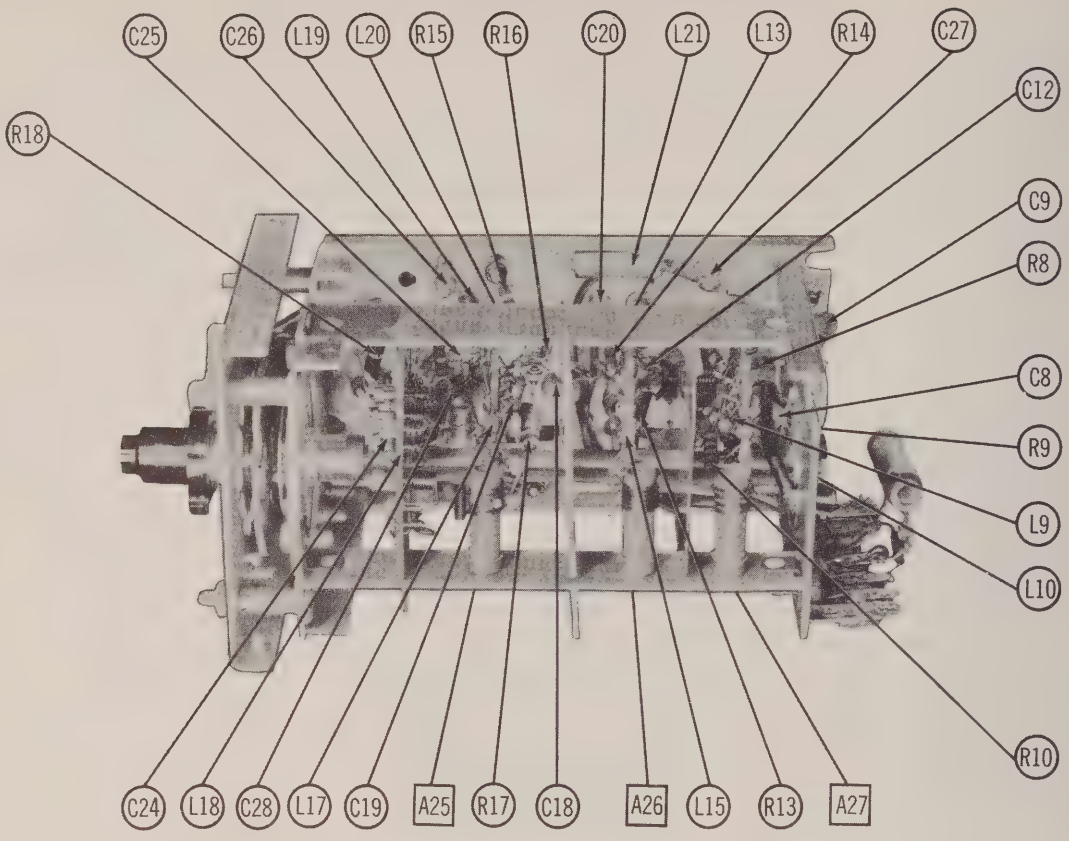
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	†1.5KΩ	†8.2Meg	†8.7Meg	0Ω	.1Ω	†8.7Meg	280KΩ	120Ω	0Ω
V 2	6X8	0Ω	100KΩ	†8KΩ	0Ω	.1Ω	0Ω	100KΩ	†3.7KΩ	†3.7KΩ
V 3	6CB6	40KΩ	68Ω	0Ω	.1Ω	†4.8KΩ	†4.8KΩ	0Ω		
V 4	6CB6	40KΩ	33Ω	.1Ω	0Ω	†4.8KΩ	†4.8KΩ	0Ω		
V 5	6CB6	.2Ω	180Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 6	12AU7	1.5Meg	3.9KΩ	.2Ω	.1Ω	.1Ω	†680KΩ	2.2Meg	0Ω	0Ω
V 7	6CL6	33Ω	3.9KΩ	†9.4KΩ	0Ω	.1Ω	†9KΩ	0Ω	†9.4KΩ	3.9KΩ
V 8	12AU7	200KΩ	4.5Meg	†4.3KΩ	0Ω	0Ω	†8.2KΩ	†23KΩ	680KΩ	.1Ω
V 9	6AU6	7Ω	0Ω	0Ω	.1Ω	†4.3KΩ	†4.3KΩ	82Ω		
V 10	6AU6	120KΩ	0Ω	0Ω	.1Ω	†10KΩ	†4.3KΩ	0Ω		
V 11	6AL5	10KΩ	10KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 12	6AV6	10Meg	0Ω	0Ω	.1Ω	300KΩ	280KΩ	†330KΩ		
V 13	6K6GT	INF	0Ω	†2.2KΩ	†1.8KΩ	470KΩ	INF	.1Ω	560Ω	
V 14	12AU7	†13KΩ	70KΩ	0Ω	.1Ω	.1Ω	#3.4Meg	1.5Meg	0Ω	0Ω
V 15	6K6GT	INF	.1Ω	†570Ω	†41Ω	2.3Meg	1.1Meg	0Ω	550Ω	
V 16	6SN7GT	1.5Meg	†45KΩ	410KΩ	480KΩ	†47KΩ	0Ω	.1Ω	0Ω	
V 17	6BQ6GT	INF	.1Ω	INF	†6.8KΩ	460KΩ	100KΩ	0Ω	180Ω	Top Cap #14Ω
V 18	6W4GT	INF	INF	1 Meg	INF	†62Ω	INF	#29Ω	#29Ω	
V 19	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #164Ω
V 20	5U4G	INF	11KΩ	INF	12.1Ω	INF	13.2Ω	INF	11KΩ	
V 21	5Y3GT	INF	11KΩ	INF	13.2Ω	INF	12.1Ω	INF	11KΩ	
V 22	17CP4	0Ω	190KΩ	Pin 10 #325KΩ	Pin 11 160KΩ	Pin 12 .1Ω				

† MEASURED FROM PIN 2 OF V21.
# MEASURED FROM PIN 3 OF V18.

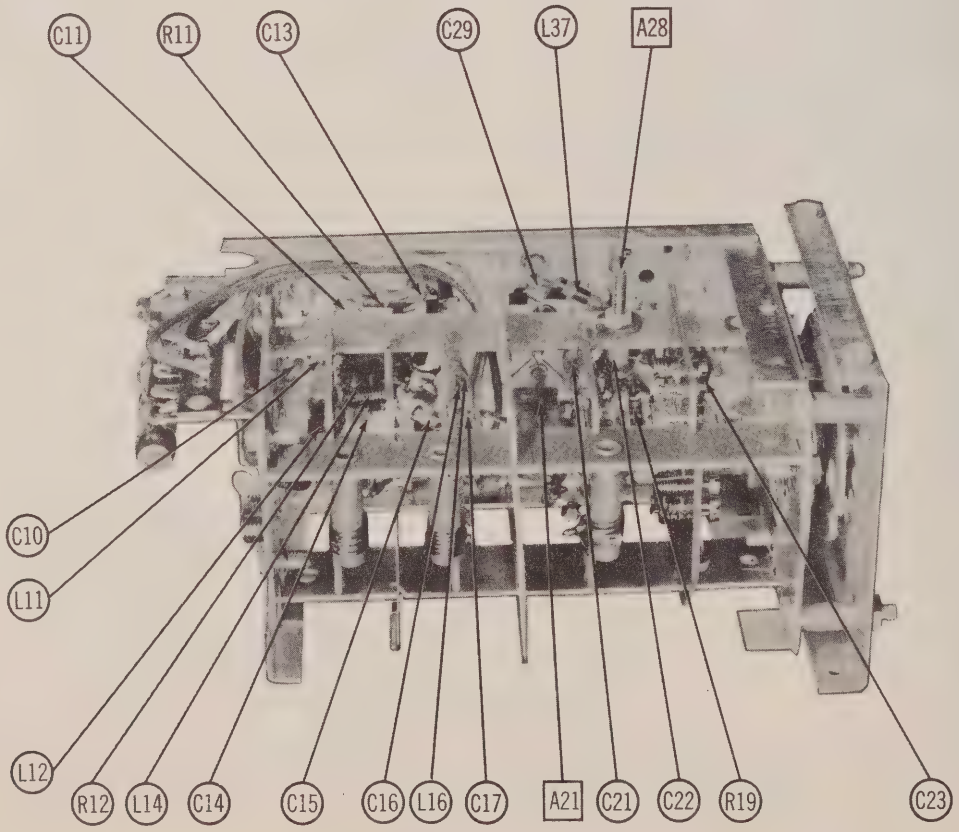


TUBE PLACEMENT CHART

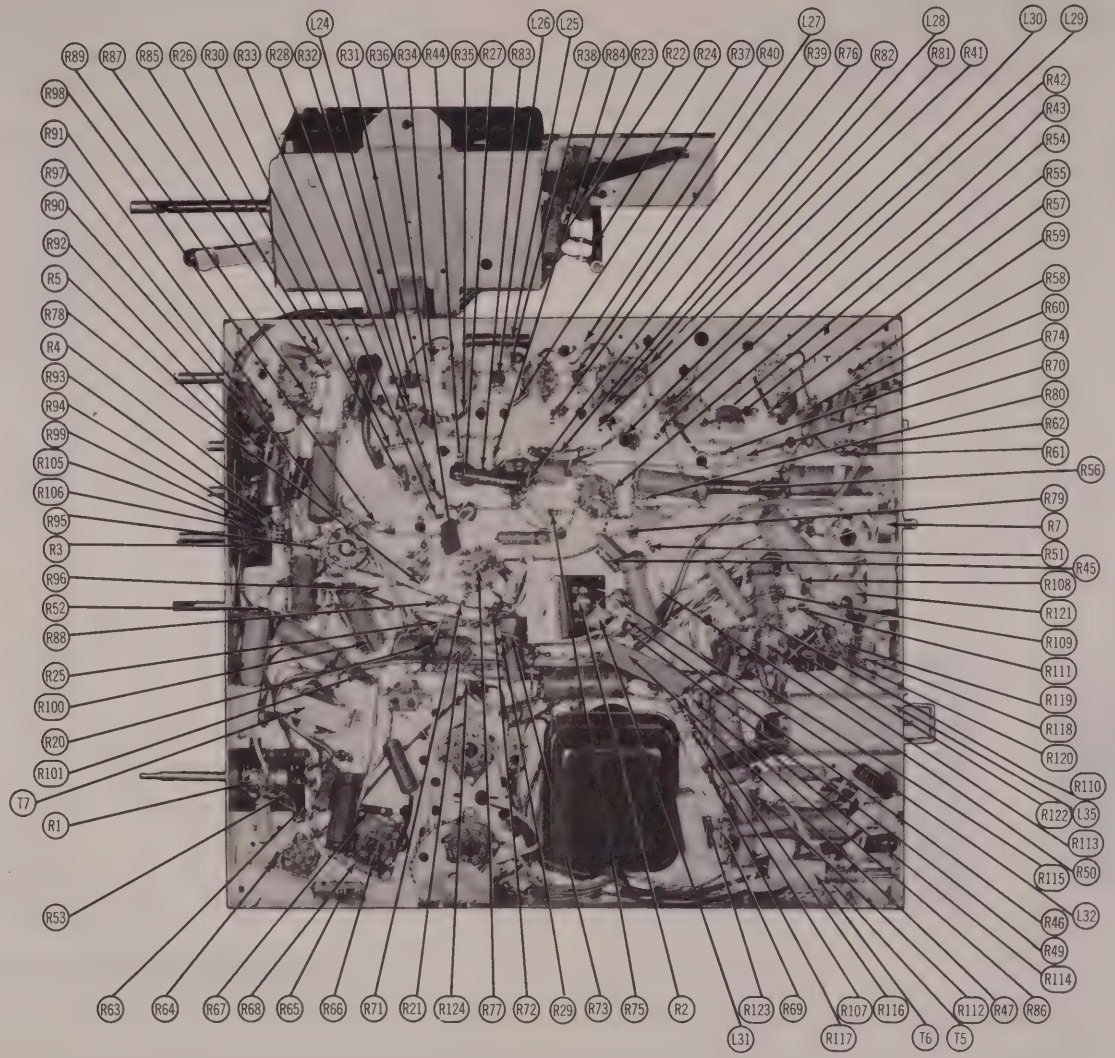
RCA VICTOR MODELS 17-T-301, U, 17-T-302, U, 17-T-310, U (Ch. KCS78, B)



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP (Fig. 1)

Check yoke. Check soldier connections in yoke, yoke plug and socket.

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18, V20 and V21.
Check amplitude of waveform W15;

If Insufficient	If Sufficient
Check components of V16. Check C99 and R118.	Check Components of V17 and V18, especially R120, R121, R122, C100 and C101.

DRIVE LINES

Check by substitution V16 and V17. Check C99 and B3 (horizontal drive control).

COMPRESSED AT LEFT SIDE

Substitute V17 and V18. Check waveform W15;

If Unsatisfactory	If Satisfactory
Check coupling network between V16 and V17.	Check T3 and T6. Check associated components.

FOLDS

Substitute V18. Check C102, C103, C93 and C104. Check associated components.

VERTICAL

LOSS OF SWEEP

Check V14 and V15. Check waveform W8;

If Unsatisfactory	If Satisfactory
Check components of vertical oscillator and coupling capacitor C80.	Check R6, R97, R98, R99, T4 and associated components.

INSUFFICIENT SWEEP

Substitute V14 and V15. Check associated components, especially C79 for leakage and C74 for open.

COMPRESSED AT BOTTOM

Substitute V14 and V15. Check C3A for open and C76 for leakage.

COMPRESSED AT TOP

Substitute V13 and V14. Check coupling network between V14 and V15.

COMPRESSED AT TOP, STRETCHED AT BOTTOM

Check C77 for leakage. Check V15 and yoke components.

FOLDS

Substitute V15. Check T5 and components.

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V6, V13 and V16. Check waveform W12;

If Unsatisfactory	If Satisfactory
Check components of V6B and V14A. Check coupling from V14A to V16.	Check V16 components, particularly C93 for leakage and C95 for open.

CRITICAL SYNC

Check C94 for open.

PULLING PICTURE

Check C88 and C92 for open. Fig. 2 results from C95 being open.

VERTICAL

LOSS OF SYNC

Substitute V6, V14 and V16. Check waveform W7;

If Unsatisfactory	If Satisfactory
Check components of V6 and V14. Check C72 and C73 for leakage.	Check components of V14 plate and cathode circuits.

CRITICAL SYNC

Substitute V6, V14 and V15. Check associated components for change in values.

TRIGGERING

Substitute V14. Check filament lead dressing around grid circuit.

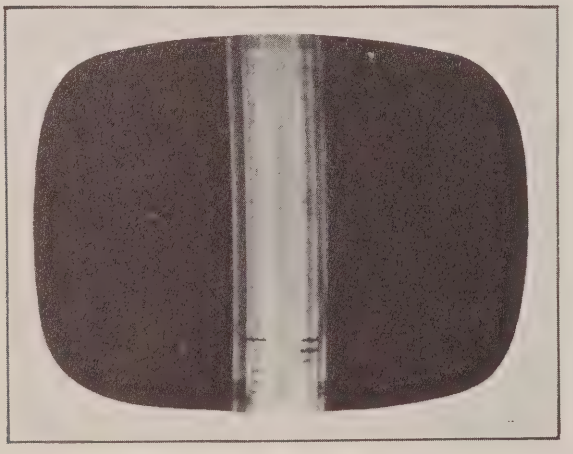


Fig. 1.

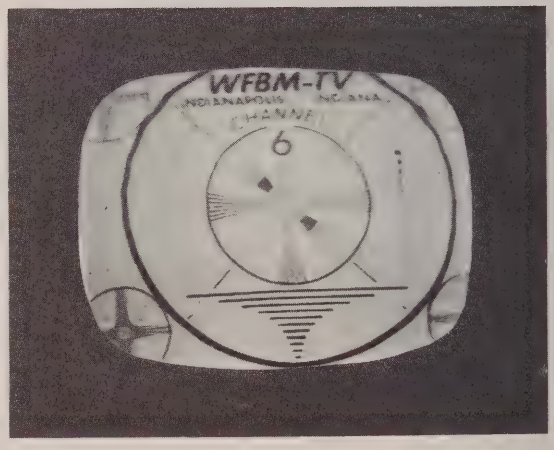


Fig. 2.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA Victor PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V2	Converter	6X8	6X8	9AK	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	AGC Rect.-Video Detector-Vert. Sync Sep.	12AU7	12AU7	9A	
V7	Video Output	6CL6	6CL6		
V8	AGC Keying Horiz. Sync Sep.	12AU7	12AU7	9A	
V9	1st Sound IF Amp.	6AU6	6AU6	7BK	
V10	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier AGC Clamper	6AV6	6AV6	7BT	
V13	Audio Output	6K6GT	6K6GT	7S	
V14	Sync Amp. Vert. Mult.	12AU7	12AU7	9A	
V15	Vert. Mult.-Vert. Output	6K6GT	6K6GT	7S	
V16	Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	
V21	LV Rectifier	5Y3GT	5Y3GT	5T	

PROPERTY OF
L. F. FRANKENSHIN
DENVER, COLORADO

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: RCA Victor PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V22	17CP4	17CP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	400	77644	AFH2-63		CO36		FP245.3	TVL-2673	
B	▲20	400								
C2A	▲100	400	76970	AFH3-40				FP431.4	TVL-3672	
B	■10	350		PRS50/25						
C	▲20	50								
C3A	150	50	75218	AFH3-112		CO74		FP387.1	TVL-3638	
B	■10	350								
C	▲5	350								
C4	18		54207				NP0K-180			
C5	5		93056	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C6	27		70935				NP0K-270			
C7	33		76739	SI33NP0	TCZ-33		NP0K-330	ZT-5433	5TCC-Q33	
C8	22		76557	SI22	D6-220		GP1K-220	UC-5422	5GA-Q22	
C9	1500		73748	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C10	1-4		76532		829-4					
C11	1500		73748	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C12	1500		73748	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C13	1500		75166	CS-1B-0015	S1-152				501C-1500	
C14	1500		73748	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK- D15	
C15	8		70597				NP0K-080			
C16	.8-3.8		75184							
C17	270		75199	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C18	270		75199	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C19	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C20	1500		75166	CS-1B-0015	S1-152				501C-1500	
C21	.8-3.8		75184							
C22	.8-3		77151		829-3			CT565A		
C23	10		55326	SI10N080			N080-331-100			
C24	.68		71504		TCZ-.68		NP0K-R68			
C25	22		76558	SI22N750	TCN-22		N750K-220		5TCU-Q22	
C26	1500		75166	CS-1B-0015	S1-152				501C-1500	
C27	1500		75166	CS-1B-0015	S1-152				501C-1500	
C28	1500		75610	SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C29	1500		75166	CS-1B-0015	S1-152				501C-1500	
C30	470		77293	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	Note 1
C31	10000		73960	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	Note 1
C32	.047	400	73553	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	Note 1
C33	470		77293	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C34	470		77293	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C35	470		77293	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C36	470		77293	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C37	.47	200	73787	P288-47		PJ2P5		PT405	2TM-P47	
C38	470		77293	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C39	470		77293	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C40A	470		77672	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
B	470			BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C41	10000		73960	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C42	10		33098	SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C43	470		77293	BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C44	47				TCZ-47		NP0-333-470		5TCC-Q47	
C45	.0047	600	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C46	270	500	39638	1469-0003		5R5T3		MCB241	MS-33	
C47	39		73664		TCN-39		N750K-390			
C48	15		39044		TCN-15		N750K-150		5TCU-Q15	
C49	.1	200	73784	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C50	.1	400	73551	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C51	.0022	600	73595	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C52	.001	600	75643	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	ASHOVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	470	1500	77673							
C54A	10000		76691	BPD-01	DD-3-103	TM5D81	811-01	DC-511	5HK-281	
B	10000			BPD-01			811-01	DC-511		
C55	10000		73960	BPD-01	DD-1032	TM5B1	811-01	DC-511	5HK-81	
C56	10000		73960	BPD-01	DD-1032	TM5B1	811-01	DC-511	5HK-81	
C57	470	500	39644	1467-0005	D6-471	SW5T5	GP2K-471	MC345	MB-35	
C58	470	500	39644	1467-0005	D6-471	SW5T5	GP2K-471	MC345	MB-35	
C59	.47	200	73787	P288-47		PJ2P5		PT405	2TM-P47	
C60	.0022	600	73595	P688-0022	D6-222	PTE5D22		PT6222	6TM-D22	
C61	.0047	500	73920	P688-0047	D6-472	PTE5D47	GP2-333-472	PT6247	6TM-D47	
C62	.033	200	73552	P488-033				PT4133		
C63	.01	400	73581	P488-01	D6-103	PT4S1	GP2-333-103	PT411	4TM-S1	
C64	.001	600	75643	P688-001	D6-102	PTE5D1	GP2L-102	PT621	6TM-D1	
C65	.22	200	73794	P488-22		PTE4D22		PT4025	2TM-P22	
C66	.01	400	73581	P488-01	D6-103	PT4S1	GP2-333-103	PT411	4TM-S1	
C67	.0027	1000	73818	P1068-003		PTE1KD5		PT1633	MB-D5	
C68	330	500	39640	1469-00035						
C69	.1	400	73551	P488-1	DF-104	PT4P1		PT401	4TM-P1	
C70	.033	400	73552	P488-033		PTE4S3		PT4133	6TM-S3	
C71	.0082	400	73808							
C72	.001	600		P688-001	D6-102	PTE5D1	GP2L-102	PT621	6TM-D1	Note 2
C73	390	1000	73094							
C74	.0047	600	73920							
C75	.0015	1000	77123							
C76	.033	600	73596	P688-033				PT6133		
C77	.0022	600	73595							
C78	.068	200	73793							
C79	.1	400	73551	P488-1	DF-104	PT4P1		PT401	4TM-P1	
C80	.1	600	73557	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C81	.022	600	73798							
C82	.047	600	73528	P688-047	DF-503	PTE5P47		PT6147	6TM-S47	
C83	.0047	600	73920	P688-0047	D6-472	PTE5D47	GP2-333-472	PT6247	6TM-D47	
C84	.1	400	73551	P488-1	DF-104	PT4P1		PT401	4TM-P1	
C85	.0039	600	73796	P688-004	D6-402	PTE5D4	GP2-333-402	PT634	6TM-D4	
C86	270	1000	76579							
C87	220	500	39638							
C88	82	1000	76474							
C89	.001	600	75643	P688-001	D6-102	PTE5D1	GP2L-102	PT621	6TM-D1	
C90	68	1000	76475							
C91	12		33380		TCM-12		N750K-120			
C92	.047	400	73553	P288-047	DF-503	PJ2S5		PT4147	2TM-S47	
C93	.1	400	73551	P488-1	DF-104	PT4P1		PT401	4TM-P1	
C94	.022	400	73552	P488-022	DD-203	PTE4S22		PT4122	4TM-S22	
C95	.47	200	73787	P288-47		PT2P5		PT405	2TM-P47	
C96	330	1000	76476							
C97	.01	600	73594							
C98	.0012	600	76995							
C99	.00068	600	76479							
C100	.1	600	73557	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C101	.27	200	73786							
C102	.022	1000	73810	P1068-022		PTE1KS22		PT61122	MB-S22	
C103	.027	1000	73811							
C104	270	1000	76579							
C105	.1	600	73557	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C106	.022	1000	73810	P1068-022		PTE1KS22		PT61122	MB-S22	
C107	500	20000	76461	HV-11	TV4-502		413-501		20DK-T5	
C108	91	2000								
C109	.047	400		489ZX-05		P7S25		PT4147	4TM-S47	Note 3
C110	.047	400		489ZX-05		P7S25		PT4147	4TM-S47	Note 3

Note 1. Not used in Ch. KCS78B.
Note 2. Some Models use .0047MFD in this application (part #73920).
Note 3. Some Models use .01MFD in this application (Part #73594).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	200KΩ		77641	QJ-447*	RTV-606		UF254L	Brightness-Panel
B	1 Meg						UR16-T254 †	Volume Tap① 250KΩ-Rear
C	Switch						US-26	Attach to R1B
R2	15KΩ		78445	Q13-118XX				Contrast Tap② 4875Ω & 10KΩ
R3A	75KΩ		77639	Q11-125	AG-47-8	AB-35	U-41	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	1000Ω		77643	Q11-108	AG-8-8	AB-5	U-4	Vert. Linearity
B	Shaft		Not Req.	SQ	KS8-3	AK-1	Not Req.	Attach to R4A
R5A	3 Meg		77124	Q11-140	AG-85-8	AB-84	U-59	Height-Note
B	Shaft		Not Req.	SQ	KS8-3	AK-1	Not Req.	Attach to R5A
R6A	1.2Meg		77642	Q11-138	AG-83-8	AB-89	U-165	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R6A
R7A	500KΩ		76975	Q11-132	AG-58-8	AB-59	SU-50	AGC
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R7A

Note. Some models may use a 2.5Meg control in this application.
† UNIVERSAL REPLACEMENT-(MALLORY EXACT DUPLICATE PART NO. UR13605).
* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-129 & P1-300 (Panel) B13-137X & R1-316 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	NOTES
R8	3300Ω-5%	½	503233	BTS-3300-5%	
R9	150Ω	½	503115	BTS-150	
R10	3300Ω	½	503233	BTS-3300	
R11	120Ω	½	503112	BTS-120	
R12	470KΩ	½	503447		
R13	1000Ω	½	503210	BTS-1000	
R14	1000Ω	½	503210	BTS-1000	
R15	100KΩ	½	503410		
R16	100KΩ	½	503410	BTS-100K	
R17	3300Ω	½	503233	BTS-3300	
R18	100KΩ	½	503410	BTS-100K	
R19	4700Ω	½	503247	BTS-4700	
R20	1.8Meg-5%	½	11769	BTS-1.8Meg-5%	
R21	180KΩ-5%	½	503418	BTS-180K-5%	
R22	470Ω	½	503147	BTS-470	Note 1
R23	10KΩ	½	77869	1 3/4A-10K	Note 1
R24	4000Ω	7	77668	1 3/4A-4000	Note 1
R25	8.2Meg	½	503582	BTS-8.2Meg	Note 1
R26	1000Ω	½	503210	BTS-1000	
R27	3800Ω	7	77671		
R28	1000Ω	½	503210	BTS-1000	
R29	120KΩ-5%	½	503415	BTS-120K-5%	Note 2
R30	68Ω-5%	½	34763	BTS-68-5%	
R31	1000Ω	½	503210	BTS-1000	
R32	56KΩ-5%	½	503256		
R33	39KΩ	½	503339	BTS-39K	Note 3
R34	33Ω-5%	½	30789	BTS-33Ω-5%	

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	NOTES
R35	100Ω	½	503210	BTS-1000	
R36	1 Meg	½	503510	BTS-1 Meg	
R37	56KΩ-5%	½	502256		
R38	180Ω-5%	½	502118	BTS-180-5%	
R39	470Ω	½	503147	BTS-470	
R40	47KΩ	½	503347		
R41	3.9Meg	½	503539	BTS-3.9Meg	
R42	3900Ω-5%	½	502239	BTS-3900-5%	
R43	33Ω	½	503033	BTS-33	
R44	5600Ω	1	513256	BTA-5600	
R45	2200Ω	2	523222	BTB-2200	
R46	10KΩ	½	503310	BTS-10K	Note 8
R47	6750Ω	10	78642		
R48	680Ω	½	503168	BTS-680	
R49	2200Ω	½	503222	BTS-2200	
R50	220KΩ	½	503422	BTS-220K	
R51	470KΩ	½	503447	BTS-470K	
R52	150KΩ	½	503415	BTS-150K	
R53	220KΩ	½	503422	BTS-220K	
R54	82Ω	½	503082	BTS-82	
R55	1000Ω	1	513210	BTA-1000	
R56	3300Ω	7	77670		
R57	1000Ω	½	503210	BTS-1000	
R58	10KΩ	1	513310	BTA-10K	
R59	47Ω	½	503047	BTS-47	
R60	39KΩ	½	503339	BTS-39K	
R61	10KΩ-5%	½	502310	BTS-10K-5%	
R62	10KΩ-5%	½	502310	BTS-10K-5%	
R63	12KΩ-5%	½	502312	BTS-12K-5%	
R64	10Meg	½	503810	BTS-10Meg	
R65	330KΩ	½	503433	BTS-330K	
R66	470KΩ	½	503447	BTS-470K	
R67	560Ω	1	513156	BTA-560	
R68	1800Ω	2	523218	BTB-1800	
R69	6800Ω	1	513268	BTA-6800	
R70	470KΩ	½	503447	BTS-470K	
R71	3.9Meg	½	503539	BTS-3.9Meg	
R72	47KΩ	½	503347	BTS-47K	
R73	68KΩ	½	503368	BTS-68K	
R74	390KΩ	½	503439	BTS-390K	
R75	18KΩ	½	503318	BTS-18K	
R76	120KΩ	½	503413	BTS-120K	
R77	680KΩ	½	503468	BTS-680K	
R78	8200Ω	½	503282	BTS-8200	
R79	22KΩ	½	503223	BTS-22K	
R80	270KΩ	½	503427	BTS-270K	
R81	2.2Meg	½	503522	BTS-2.2Meg	

Note 1. Not used in chassis KCS78B.
Note 2. Some models use a 150KΩ resistor in this application.
Note 3. Some models use a 43KΩ resistor in this application.
Note 4. Some models use a 470KΩ resistor in this application.
Note 5. Some models use a 1.5Meg resistor in this application.
Note 6. Some models use a 100KΩ resistor in this application.
Note 7. Some models use a 39Ω resistor in this application.
Note 8. Not used in all models.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	NOTES
R82	680KΩ	½	503468	BTS-680K	
R83	47KΩ	½	503347	BTS-47K	
R84	22KΩ	½	503322	BTS-22K	
R85	8200Ω	½	503282	BTS-8200	
R86	3900Ω-5%	½	502239	BTS-3900-5%	
R87	22KΩ	½	503322	BTS-22K	
R88	18KΩ	½	503318	BTS-18K	
R89	390KΩ	½	503439	BTS-390K	Note 4
R90	1.2Meg	½	503512	BTS-1.2Meg	Note 5
R91	150KΩ	½	503415	BTS-150K	Note 6
R92	100KΩ	1	513410	BTA-100K	
R93	56KΩ-5%	½	502256	BTS-56K-5%	
R94	8200Ω	½	503282	BTS-8200	
R95	270KΩ-5%	½	502427	BTS-270K-5%	
R96	8200Ω	½	503282	BTS-8200	
R97	1.2Meg	½	503512	BTS-1.2Meg	
R98	1.1Meg-5%	½	502511	BTS-1.1Meg-5%	
R99	47Ω	½	503147	BTS-47	Note 7
R100	33000Ω	½	503233	BTS-3300	
R101	15KΩ	½	503315	BTS-15K	
R102	560Ω	½		BTS-560	
R103	560Ω	½		BTS-560	
R104	1000Ω	½		BTS-1000	
R105	22KΩ	½	503322	BTS-22K	
R106	68KΩ	½	503368	BTS-68K	
R107	150KΩ	½	503415	BTS-150K	
R108	330KΩ	½	503433	BTS-330K	
R109	820KΩ	½	503482	BTS-820K	
R110	82KΩ	½	503382	BTS-82K	
R111	330KΩ	½	503433	BTS-330K	
R112	3900Ω	½	503239	BTS-3900	
R113	150KΩ-5%	1	512415	BTA-150K-5%	
R114	18KΩ	½	503318	BTS-18K	
R115	1.8Meg-5%	1	39063	BTA-1.8Meg-5%	
R116	47KΩ-5%	1	512347	BTA-47K-5%	
R117	820KΩ	½	503482	BTS-820K	
R118	470KΩ	½	503447	BTS-470K	
R119	2.2Meg	½	503522	BTS-2.2Meg	
R120	47Ω	½	503047		
R121	180Ω	2	78639	BW-2-180	
R122	68000Ω	2	523268	BTS-6800	
R123	56KΩ	½	503256	BTS-56K	
R124	270KΩ	½	503427	BTS-270K	
R125	5.1Ω	1	76796		
R126	100KΩ	½	503410	BTS-100K	Note 8

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ⑤1.98	562VCT .290ADC	5VAC ⑧5A	6.3VAC ⑩3.5A REC. 4 6.3VAC ⑨7.7A	77635	P-8157		TP-319 ①		

① Drill new mounting hole.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	20Ω tap ⑥20Ω, 33Ω, 37Ω, 51Ω	0Ω	76795		HVO-9		D-19 ①		Horiz. Output Trans.
T3	230Ω	15Ω	77636	A-8113	A-3098 ①	TSO-7	A-98X ①		Vert. Output Trans.
T4A	24Ω		77697	DY-9A ⑥	MDF-70	TY-3	Y-17		Horiz. Deflection Coils
B	44Ω								Vert. Deflection Coils
T5	21Ω		76442	WC-5 ③④	MWC-1②	TWL-1	WC-12 ⑤		Horiz. Lin. Coil
T6	12Ω		76441	WC-5 ③④	MWC-1 ③④	TWL-1	WC-11 ⑥		Width Coil

① Connect term 7 to term 8.
② Drill one new mounting hole.
③ Enlarge mounting hole.
④ Do not use secondary.
⑤ Connect to coded blue & red dot terminals.
⑥ Uses original horizontal deflection coil network if necessary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	6.4KΩ	3.4Ω	322Ω	.06Ω	76982	A-3878	A-2931	RO-13	S-7X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	JENSEN PART No.	QUAM PART No	NOTES
SP1	5"	PM	3.4Ω	77000 75023 ①	ST-105 Mod. P5-X	5AQ7	① 8" Speaker used in Models 17-T-310 and 17-T-310U

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 (~)	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.290ADC	41Ω	1.06 Hy.	77676	C-2326 ①	C-2966 ①	TR-1733 ①	C-17X ①

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA Victor PART No.	MILLER PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L2	Ant. Trans.	.6Ω	.8Ω	73591				
L3	Ant. Trans.	.6Ω	.8Ω	73598				
L4	IF Trap	0Ω		76542				Includes core
L5	Ant. Shunt Coil	0Ω		78538				Includes core
L6	Ant. Shunt Coil	0Ω		76537				Includes core
				76541				Includes core
L7	IF Trap	0Ω		76540				Includes core, core part #76543
L8	FM Trap	0Ω						
L9	Ant. Coils	0Ω		78556				Includes stator complete with rotor, coils, C8, R8 and R10.
L10	Ant. Shunt Coils	0Ω		77864				Includes stator complete with rotor, coils, C9 and R6, Channel 13
L11	Ant. Coil	0Ω		76581				
L12	Fil. Choke	0Ω		73477				
L13	IF Trap	0Ω		78535				
L14	Neutr. Coil	0Ω		76562				
L15	RF Coils	0Ω		76563				Includes stator complete with rotor coils C17&R14. Channel 13, part # includes .8-3.8MMF Cap.
L16	RF Coil	0Ω		76529				
L17	Mixer Grid Coils	0Ω		77822				Includes stator complete with rotor, coils, C18, C19, R15, R16 and R17.
L18	Osc. Coils	0Ω		77306				Includes stator complete with rotor, coils, C23 and C24.
L19	Fil. Choke	0Ω		76763				
L20	Fil. Choke	0Ω		76763				
L21	Fil. Choke	0Ω		77706				
L22	Conv. Plate	.2Ω	0Ω	77863				Includes 27KΩ resistor
L23	1st. Video IF	.1Ω	.2Ω	77637		17-4521		Includes trap and 27KΩ resistor
L24	2nd. Video IF	.2Ω	.2Ω	77638	6219	17-4522		
L25	Fil. Choke	0Ω		73477	4604			1.35 Microhenries
L26	3rd. Video IF	.2Ω	.2Ω	76433	6219	17-4523		
L27	4th. Video IF	.2Ω	.2Ω	76433	6219	17-4523		
L28	Series Peaking Coil	3.4Ω		76011	6176	19-3036		36 Microhenries
L29	Shunt Peaking Coil	7Ω		71536	6181	19-3250		250 Microhenries
L30	4.5MC Trap	3.2Ω		76983	1470	20-1004		
L31	Shunt Peaking Coil	26Ω		77134	4653 †	19-5300		1000 Microhenries, wound on 10KΩ resistor in some Models.
L32	Series Peaking Coil	10Ω		77925	4646 ■	19-3250 ■		220 Microhenries * wound on 27KΩ resistor
L33	Sound IF	1.7Ω		76981		17-1071		Includes 22MMF capacitor and 120KΩ resistor
L34	Ratio Det.	1Ω	.4Ω CT	77112	1468	17-1033		Tertiary Winding - .3Ω
L35	Horiz. Osc.	70Ω		76440	6183	20-1402		Tapped @ 55Ω, horiz. waveform winding -45Ω
L36	RF Choke	.72Ω		76840	4604		CL-1	1.5 Microhenries
L37	RF Choke	.2Ω		77153				

* Some Models use 250 microhenries series peaking coil in this application.
† Parallel with 10KΩ resistor.
■ Parallel with 27KΩ resistor.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA RCA Victor PART No. FUSE	RCA Victor PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG F/T	1/4A 250V	73800		318.250 (3AG 1/4A F/T)		GJV 1/4	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RCA Victor PART No.		NOTES
M2	Bayonet	7.5V.	.2	White	11765		Type #51

RCA VICTOR MODELS 17-T-301, U, 17-T-302, U, 17-T-310, U (Ch. KCS78, B)

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M3A	RF Tuner	KRK11B	Models 17-T-301, 17-T-302 and 17-T-310
B	RF Tuner	KRK12	Models 17-T-301U, 17-T-302U and 17-T-310U
M4	Switch	33491	TV-Phono Selector
M5	Focus Magnet	76168	Includes centering device
M6	Ion Trap	76317	
All	Trimmer Capacitor	71496	IF Link, 5-70MMF
B3, B6	Trimmer Capacitor	75217	Horiz. Locking, horizontal drive, dual 10-160MMF
	Back (Cabinet)	77698	Models 17-T-301, 17-T-301U, 17-T-302U, 17-T-302
	Back (Cabinet)	77713	Models 17-T-310 and 17-T-310U
	Safety Glass	77703	Maroon or Mahogany instruments
	Safety Glass	77722	Blonde Mahogany instruments, Models 17-T-310 or 17-T-310U
	Retainer (Glass)	77704	Maroon or Mahogany instruments
	Retainer (Glass)	77723	Blonde Mahogany instruments, Models 17-T-310 or 17-T-310U
	Mask	77702	Maroon or Mahogany instruments
	Mask	77721	Blonde Mahogany instruments, Models 17-T-310 or 17-T-310U
	Knob	77709	Brightness, Maroon or Mahogany instruments
	Knob	77718	Brightness, Blonde maghogany instruments, Models 17-T-310 and 17-T-310U
	Knob	77708	Channel Selector, Models 17-T-301, 17-T-302 and 17-T-310
	Knob	77751	Channel Selector, Maroon or Mahogany instruments, Models 17-T-301U, 17-T-302U and 17-T-310U
	Knob	77707	Fine Tuning, Maroon or Mahogany instruments, Models 17-T-301, 17-T-302 and 17-T-310
	Knob	77750	Fine Tuning, Models 17-T-301U, 17-T-302U and 17-T-310U
	Knob	77717	Fine Tuning, Blond Mahogany instruments, Model 17-T-310.
	Knob	77699	Picture Contrast, Maroon or Mahogany instruments
	Knob	77719	Picture Contrast, Blonde Mahogany instruments, Models 17-T-310 and 17-T-310U
	Knob	77710	Off/On Volume

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

SOUND BARS

Check adjustment of A17 (4.5 MC trap) in video amplifier grid circuit. Check local oscillator adjustment video IF alignment.

POOR RESOLUTION

Check by substitution video IF tubes. Check alignment of video IF stages.

SMEAR

Check video amplifier V7 and associated components, particularly the peaking coils.

ONE WIDE BLACK BAR

Check tuner, video IF, video delector and video amplifier tubes for filament to cathode leakage.

POOR CONTRAST

Check waveform W1;

If Unsatisfactory	If Satisfactory
Check V3, V4, V5 and V6. Check alignment.	Check waveform W2.

Check waveform W2;

If Unsatisfactory	If Satisfactory
Substitute V7 and check associated components.	Check picture tube and grid circuit components.

AUDIO

WEAK OR NO SOUND

Substitute V9, V10, V11, V12 and V13. Check associated components. Check speaker. Check sound IF and ratio detector alignment. Check function switch contacts.

BUZZ

Adjust ratio detector secondary for minimum buzz. If still noticable, substitute V11 and readjust.

DISTORTED

Check audio amplifier stages V12 and V13 using audio signal generator and scope;

If Undistorted	If Distorted
Substitute V9, V10 and V11. Check adjustment of ratio detector.	Check components of stage where distortion occurs.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check fuse in high voltage cage.

Check waveform W15;

If Unsatisfactory	If Satisfactory
Check horizontal oscillator components and coupling network between V16 and V17.	Check components of V18. Check T3 and T5. Check all associated components.

WEAK HIGH VOLTAGE

Follow procedure outlined under loss of high voltage.

BLOOMING

Substitute V17, V19, V20 and V21. Check associated components. Check picture tube.

LOSS OF FOCUS

Check C100 for open. Follow procedure outlined under blooming.

POWER

DIM PICTURE

Measure B plus;

If Low	If Normal
Substitute V20 and V21. Check for shorts.	Check V18 and boost B plus circuit.

SMALL RASTER, WEAK SOUND

Check B plus circuits for shorts. If no shorts are present and B plus is low, check V20 and V21.

GENERAL

RASTER, BUT NO PICTURE, SOUND OR SNOW

Check by substitution V2, V3, V5, V6 and V7. Check associated components.

WEAK PICTURE AND WEAK SOUND

Substitute V4 and check components

SOUND BUT NO PICTURE

Check by substitution V8 and V14. Check associated components.

SNOWY PICTURE, GOOD SOUND

Substitute V1 and check components.

INTERMITTANT STREAKS

Check high voltage circuit for corona discharge and arcing. This may best be done by looking for a blue glow in the dark.

The Trouble-Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

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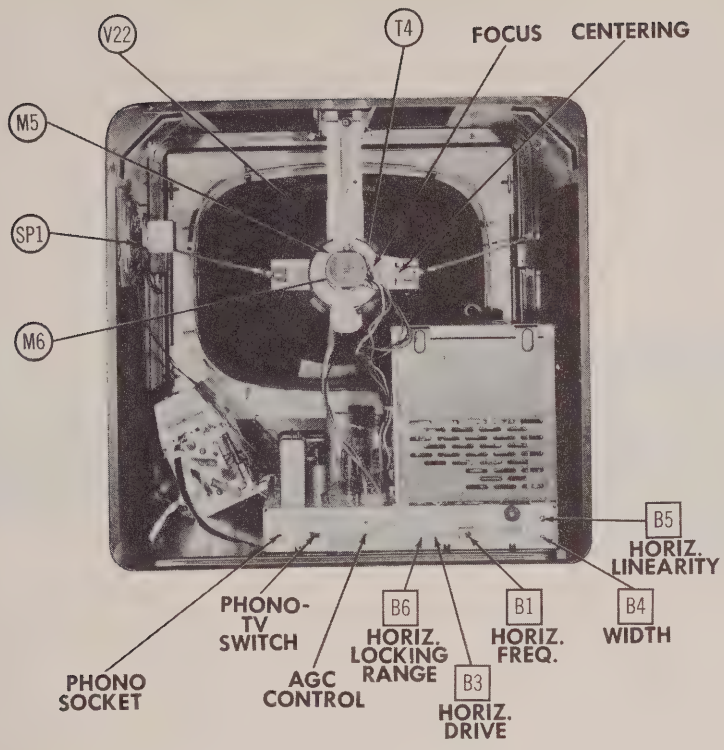


CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL FREQUENCY ADJUSTMENT

Turn the set on and tune in a TV station, preferably a test pattern.
If the picture cannot be synchronized horizontally with the horizontal hold control, adjust the horizontal frequency slug (B1) until picture will synchronize. If picture still will not synchronize, adjust the horizontal waveform slug (B2) several turns out of the coil and readjust B1 to synchronize the picture.
If picture width or linearity is incorrect adjust the horizontal drive trimmer (B3) the width control slug (B4) and the horizontal linearity control slug (B5) for proper results.

HORIZONTAL WAVEFORM ADJUSTMENT

The horizontal waveform adjustment is made at the factory and normally will require no readjustment. B1 and B2 are adjusted simultaneously while watching the picture.
Set the horizontal hold control fully clockwise. Turn B1 until picture falls out of sync and 3 or 4 diagonal black bars sloping down to the right appear on the screen.
Turn B2 clockwise, at the same time adjusting B1 to maintain 3 or 4 bars on screen.
Continue adjusting B1 and B2 in that manner until the oscillator begins to motorboat, then adjust B2 counter clockwise until motorboating stops. To check adjustment turn B1 until picture synchronizes, then reverse the direction falls out of sync with diagonal bars sloping down to the right.
Continue to turn B1 in same direction. No more than 3 or 4 bars should appear on screen. Instead the horizontal oscillator should start to motorboat. Retouch B2 until this condition is obtained.
To observe the horizontal waveform connect the low capacity probe of an oscilloscope to terminal C of L35.
Turn the horizontal hold 1/4 turn from counter clockwise so that picture is in sync.
The waveform on the scope should appear as in Fig. 9. Adjust B2 for broad and narrow peaks of equal height as in Fig. 9.
If necessary while adjusting B2 keep the picture in sync with the horizontal hold control.

HORIZONTAL LOCKING RANGE ADJUSTMENT

With the horizontal hold control in full counter clockwise position momentarily interrupt the signal by switching off channel and back. If picture remains in sync turn B1 slightly and again switch off channel, repeating until picture loses sync with diagonal lines sloping down to the left. Slowly turn the horizontal hold control clockwise and note the least number of bars obtained just before the picture pulls into sync. If the number is more than 3 adjust the horizontal locking trimmer (B6) slightly clockwise. If the number is less than 2 adjust B6 counter clockwise. Recheck as above for the least number of bars and readjust B6, if necessary, until 2 or 3 bars are present .
Turn the horizontal hold control fully clockwise and adjust B1 until the diagonal bar sloping down to the right appears on the screen, then reverse direction of adjustment of B1 until the diagonal bar just disappears, leaving the picture in synchronization.

AGC CONTROL ADJUSTMENT

Connect an oscilloscope to pin 6 (plate) of 6CL6 (V7). Turn the AGC control fully counter clockwise. Tune in a strong TV signal and adjust the scope to see the video waveform. Turn the AGC control clockwise until the sync tips begin to be compressed, then counter clockwise just enough to remove the compression.

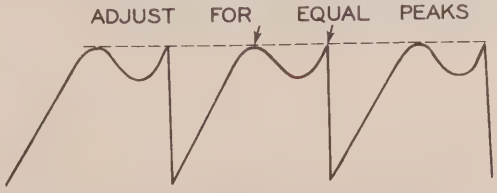
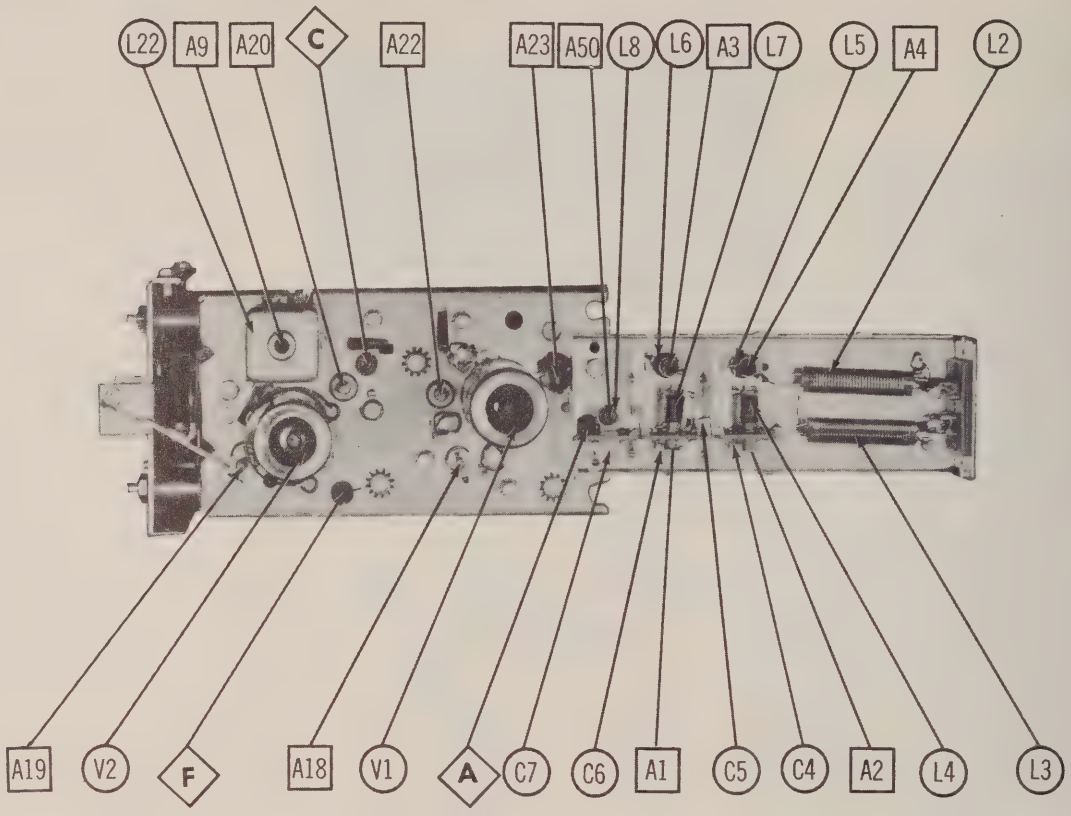
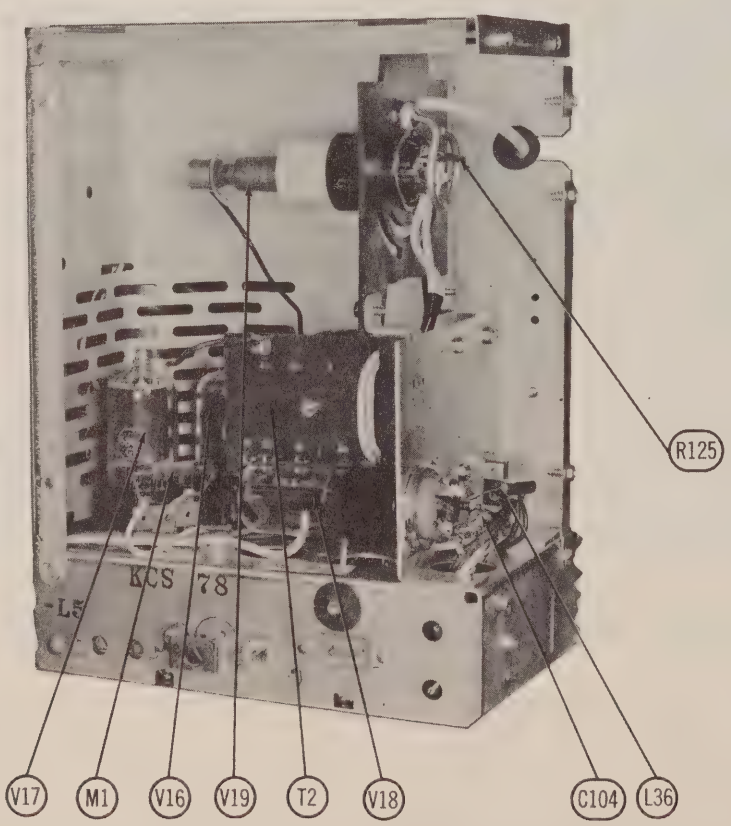


FIG. 9



RF TUNER – TOP VIEW



HIGH VOLTAGE COMPARTMENT

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector, fine tuning knobs and selector escutcheon. To remove escutcheon, slide clip spring to the left.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 2 metal retainers on each side of Crt. located on inside front of cabinet.

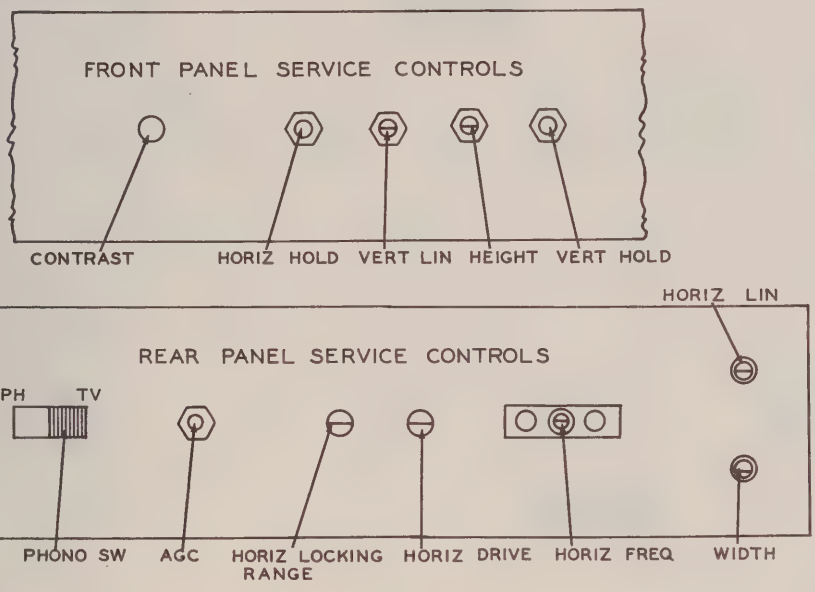
Remove 2 safety glass retaining strips. Remove safety glass.

Hold safety glass during this operation. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary ro remove chassis. (See disassembly instruction.).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS—AGC CONTROL

Turn brightness control fully clockwise. Turn AGC Control fully counter clockwise then clockwise until a very slight bend or change of bend in picture is noted. Then turn counter clockwise enough to remove the bend or change of bend. With very weak signals turn AGC Control clockwise until snow in picture becomes more pronounced then counter clockwise until best signal to noise ratio is obtained. Adjustment should be made on a strong signal if possible.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Oscillator Circuit can be made from the rear panel of the chassis. Set the Horiz. Hold Control at the mid-position of its range and adjust the Horiz. Freq. slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary L34 located on bottom of chassis. (See tube placement chart).

FUSES

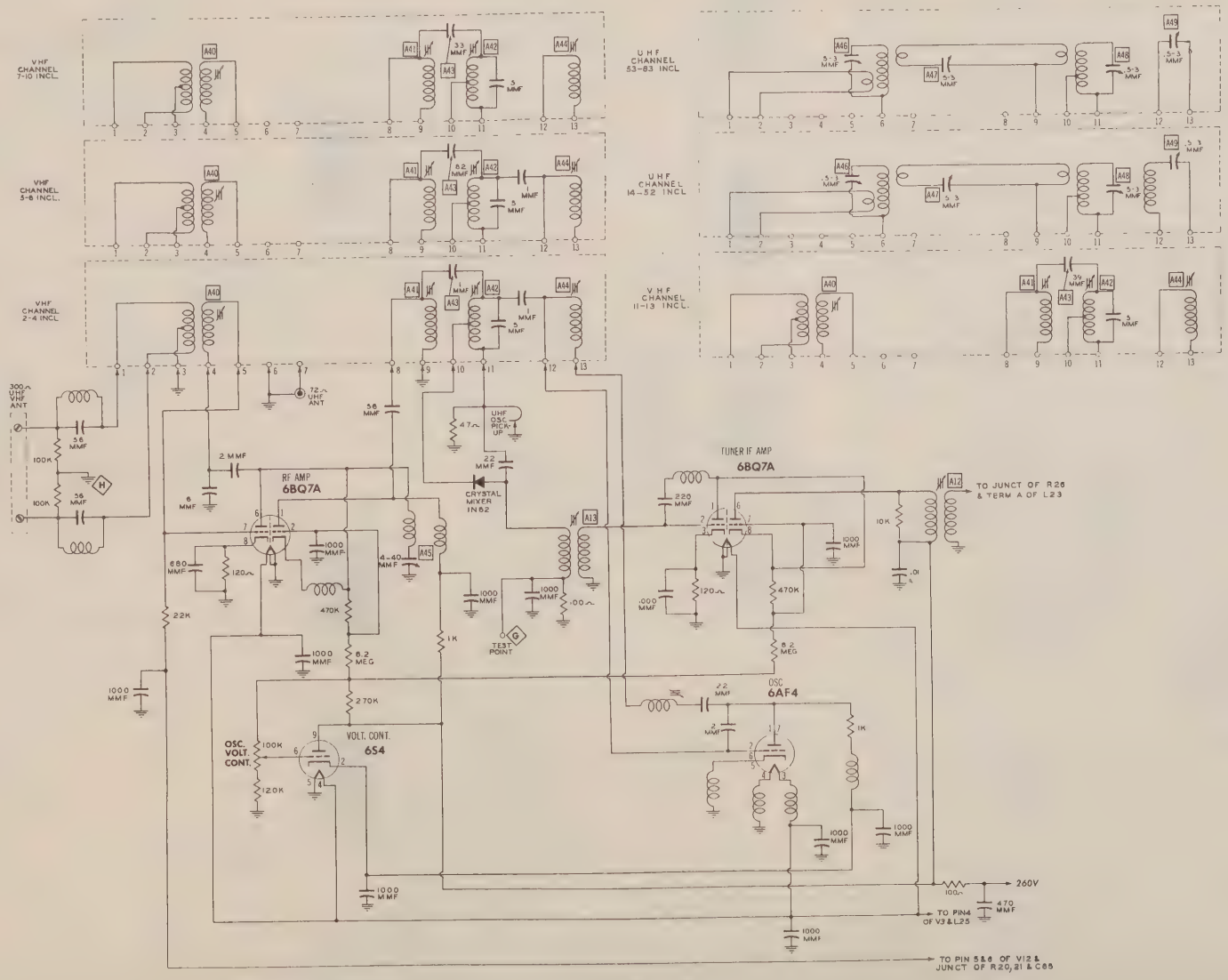
One fuse is used for Horiz. Sweep Circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically be means of a centering lever on the PM. Focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push on type control knobs. from front panel.
2. Disconnect transmission line from rear cover.
3. Remove 4 metal screws. Remove rear cover.
4. Disconnect speaker, yoke plug, Crt. socket & HV lead.
5. Remove 5 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker. (Not necessary for chassis removal).


VHF CHANNEL 7-10 INCL.
VHF CHANNEL 5-6 INCL.
VHF CHANNEL 2-4 INCL.
UHF CHANNEL 53-83 INCL
UHF CHANNEL 14-52 INCL
VHF CHANNEL 11-13 INCL.
300Ω VHF ANT
72Ω UHF ANT
RF AMP 6BQ7A
TUNER IF AMP 6BQ7A
CRYSTAL MIXER 1N82
UHF OSC PICK UP
OSC 6AF4
VOLT. CONT. 6S4
OSC. VOLT. CONT.
TEST POINT
TO JUNCT OF R26 & TERM A OF L23
260V
TO PIN 4 OF V3 & L25
TO PIN 5 & 6 OF V12 & JUNCT OF R20, 21 & C65

ALTERNATE TUNER KRK12 USED IN MODEL 17T301U, 17T302U & 17T310U

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTERNATE TUNER SCHEMATIC

SILVERTONE
MODEL 3174 (Ch. 132.035-2)

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SILVERTONE
MODEL 3174 (Ch. 132.035-2)

TRADE NAME	Silvertone Model 3174 (Ch. 132.035-2)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Twenty

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.92 Amp @ 117 Volts AC
TUNING RANGE— Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier).

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions 14, 15,16
Photographs
Cabinet-Rear View 11
Capacitor and Alignment Identification 4, 9
Chassis-Top View 3
RF Tuner 10
Resistor Identification 19, 20
Photographs (Cont)
Trans. & Inductor Identification 13
Resistance Measurements 8
Servicing in the Field 18
Schematic 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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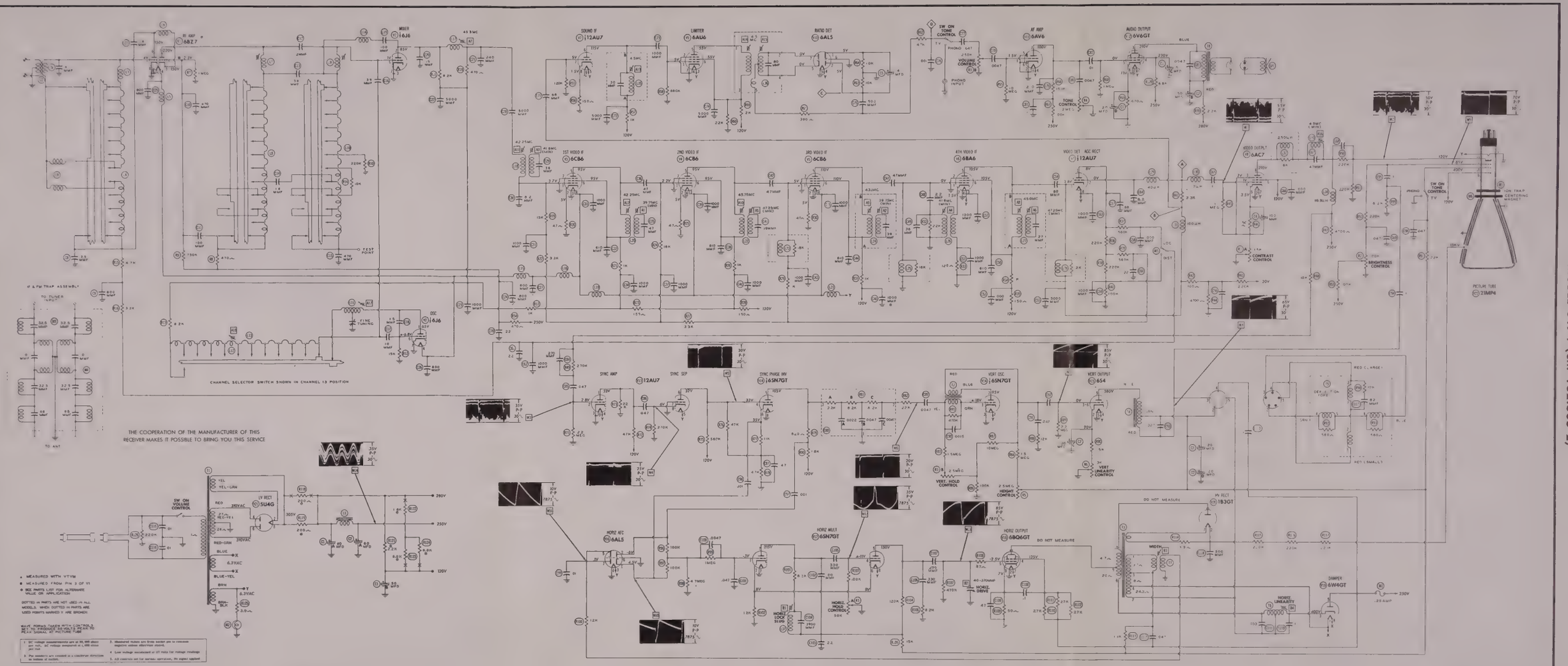
SILVERTONE
MODEL 3174 (Ch. 132.035-2)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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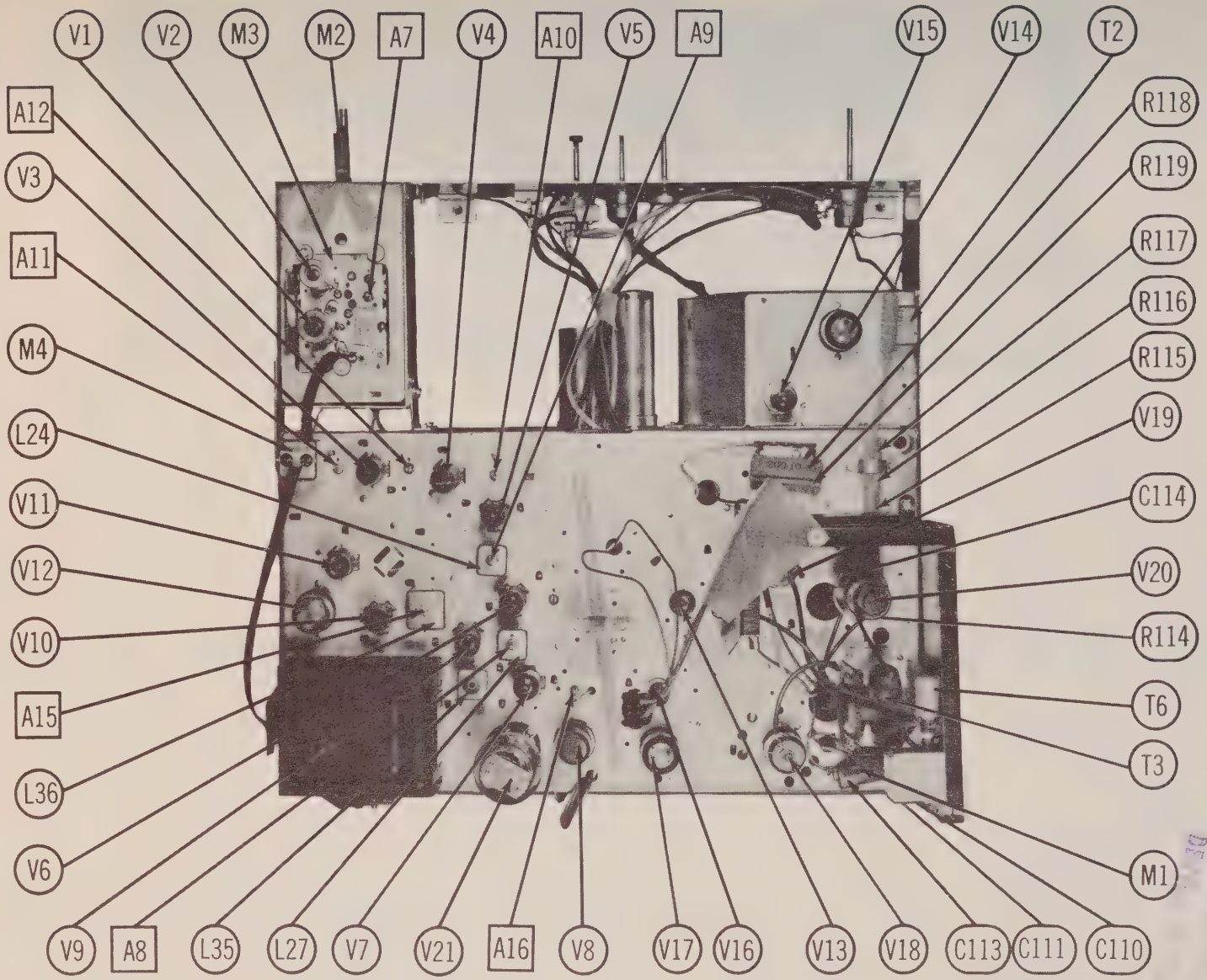
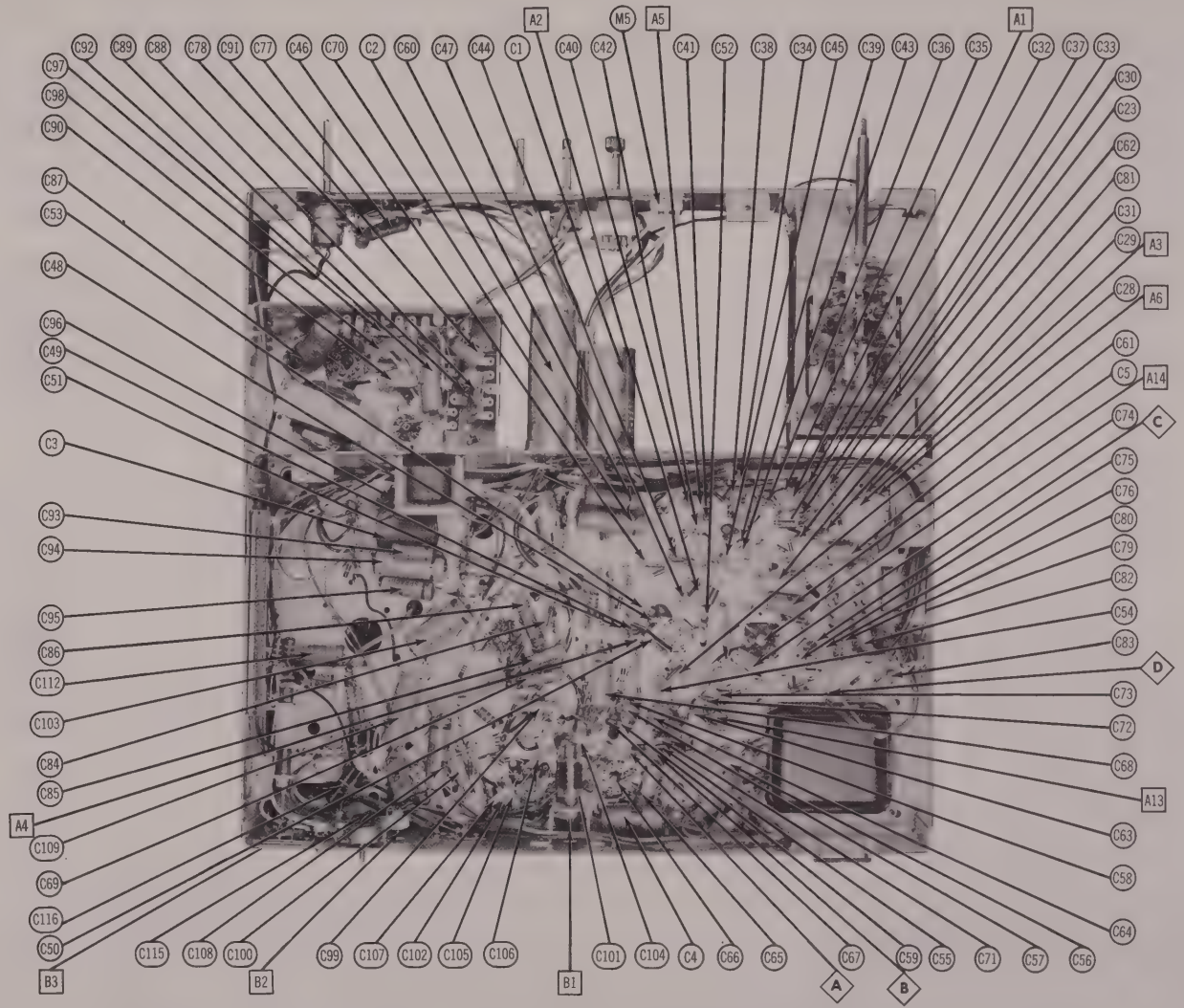
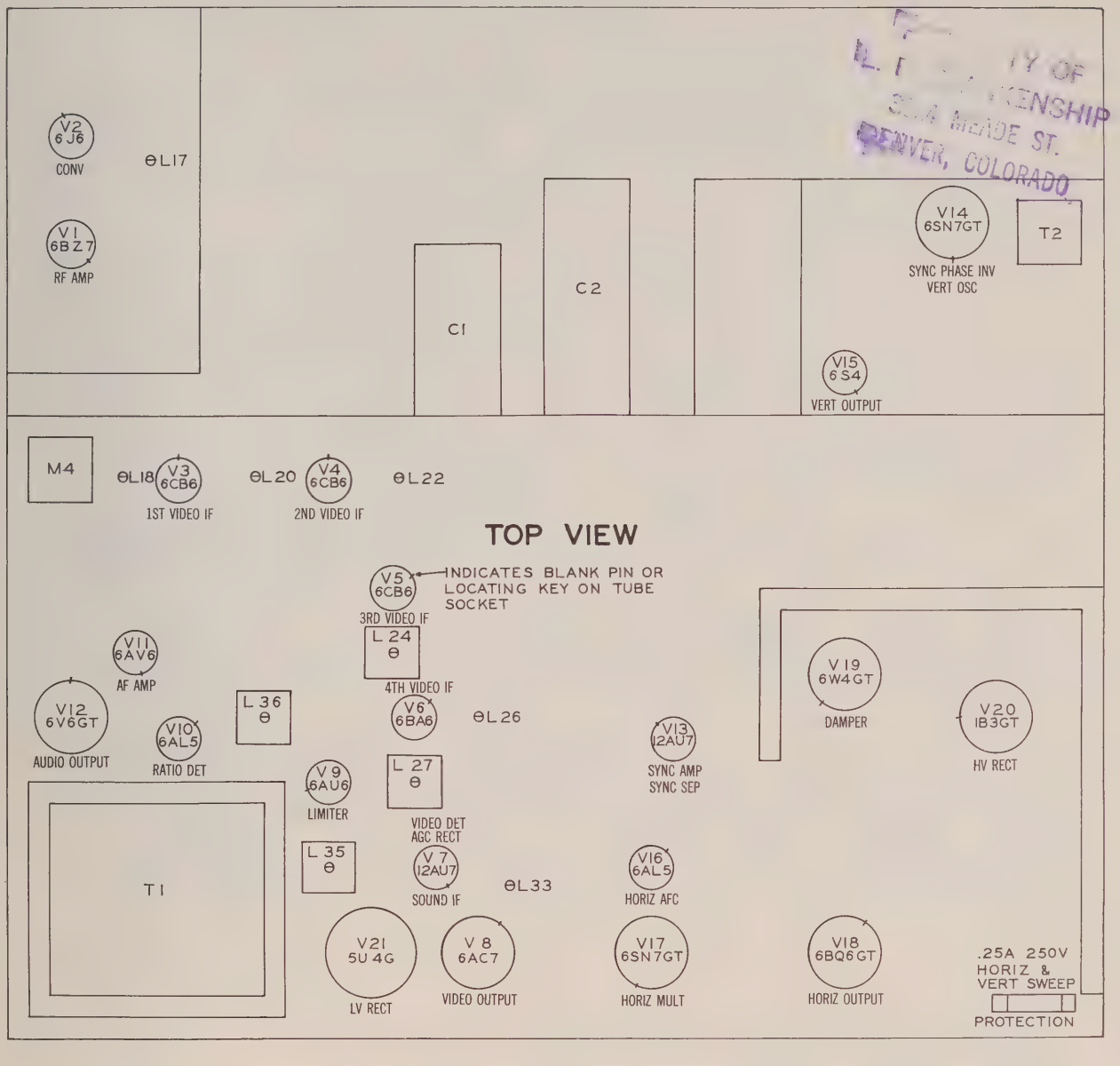


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V7
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V8, V22
Has pic, no sound-V7, V9, V10, V11, V12

SYNC FAILURE
No vert. sync.-V14
No horiz. sync.-V14, V16, V17
No vert. or horiz. sync.-V13, V14

SWEEP FAILURE
No raster, has sound-V17, V18, V19, V20, V22 Fuse (M1)
No vertical deflection-V14, V15
Poor vert. linearity or foldover-V14, V15
Poor horiz. linearity or foldover-V17, V18, V19
Narrow picture-V17, V18, V19, V20, V21
Vert. off freq.-V14
Horiz. off freq.-V14, V16, V17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Set Local-Distance switch to "Local" position.
Connect the negative lead of a 3 volt battery to the junction of R36 and R38. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to tuner test point (on top of tuner). Low side to chassis.	Not used	39.75MC	9, 10 or 11	Use VTVM. DC probe to point (A). Common to point (B).	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	"	41.6MC	"	"	A3, A4	"
3.	"	"	"	47.25MC	"	"	A5, A6	"
4.	"	"	"	45.3MC	"	"	A7	Start with core all the way in. Tune outwards for maximum deflection.
5.	"	"	"	45MC	"	"	A8	Adjust for maximum deflection.
6.	"	"	"	43.1MC	"	"	A9	"
7.	"	"	"	45.75MC	"	"	A10	"
8.	"	"	"	42.25MC	"	"	A11, A12	"
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	41.6MC 42.25MC 42.75MC 45.0MC 45.75MC	10	Vert. Amp. of scope thru 18KΩ to point (A). Low side to chassis.		Use separate marker generator. Clip hot lead to chassis near V3. Check for response curve similar to Fig. 1. If necessary retouch A7 thru A12 for desired response.
10.	"	"	"	41.6MC	10	"	A4	Increase scope gain for expanded trace of 41.6MC trap region. Adjust A4 for response as in Fig. 2.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel.	DC probe to point (C) Common to chassis.	A13, A14	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to point (D) Common to chassis.	A15	Adjust for a zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. Amp. to point (C). Low side to chassis.	A13, A14	Disconnect stabilizer capacitor C5. Adjust for curve of maximum amplitude and symmetry as in Fig. 3.
12.	"	"	"	"	"	Vert. Amp. to point (D). Low side to chassis.	A15	Re connect capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Remove 6AC7 (V8) from its socket. Connect a 200MMF capacitor from pin 8 to pin 4 of V8 socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	.01MFD	High side to junction of R47 and R48. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel.	DC probe to point (C) Common to chassis.	A16	Adjust for MINIMUM deflection.

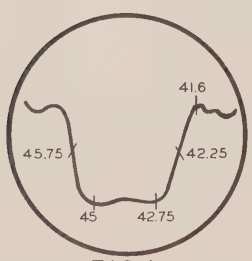


FIG. 1

FIG. 2

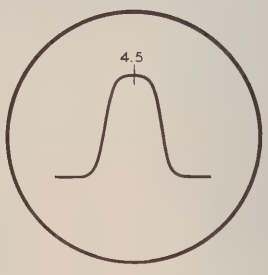


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Connect the bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point (A) Low side to chassis.	A17	Adjust to place sound marker in notch of response curve as in Fig. 5.
15.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check for sound marker placement as in Fig.5 If necessary make compromise adjustment of A17 for any individual channel then check all other high band channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
16.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A18	Adjust to place sound marker in notch of response curve as in Fig. 5.
17.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check for sound marker placement as in Fig.5 If necessary make compromise adjustments of A18 for any individual channel then check all other low band channels to see that they have not been seriously affected.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

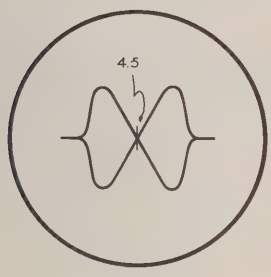


FIG. 4

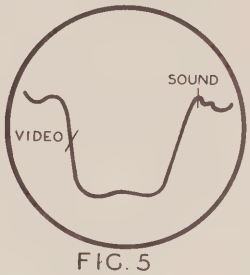
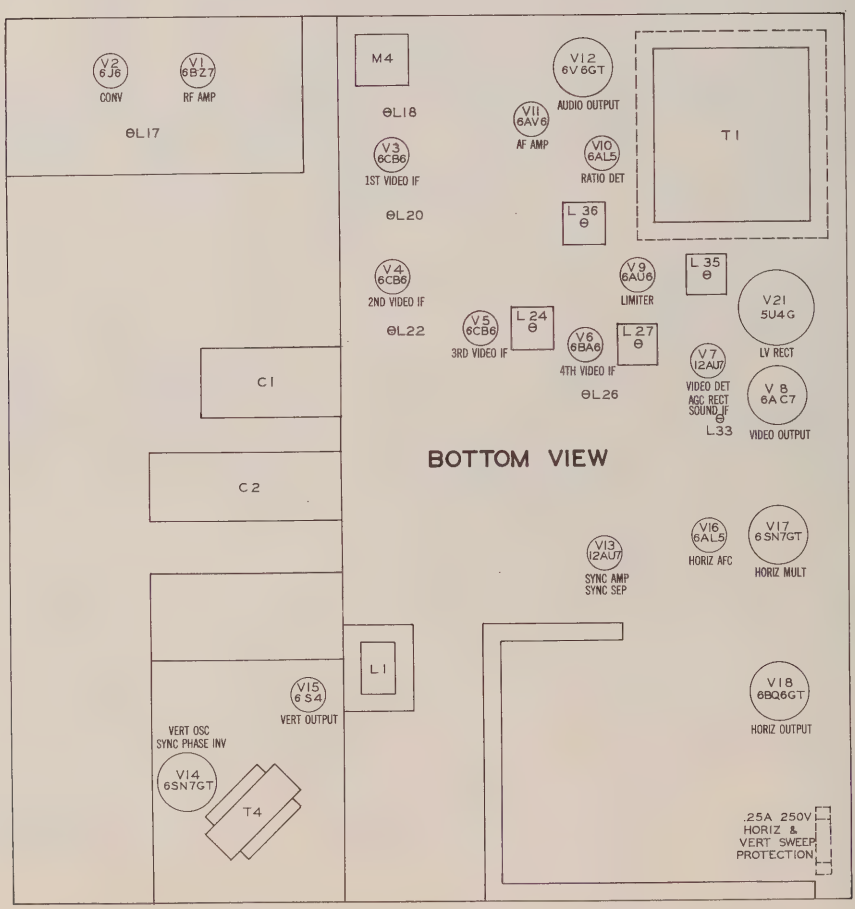


FIG. 5

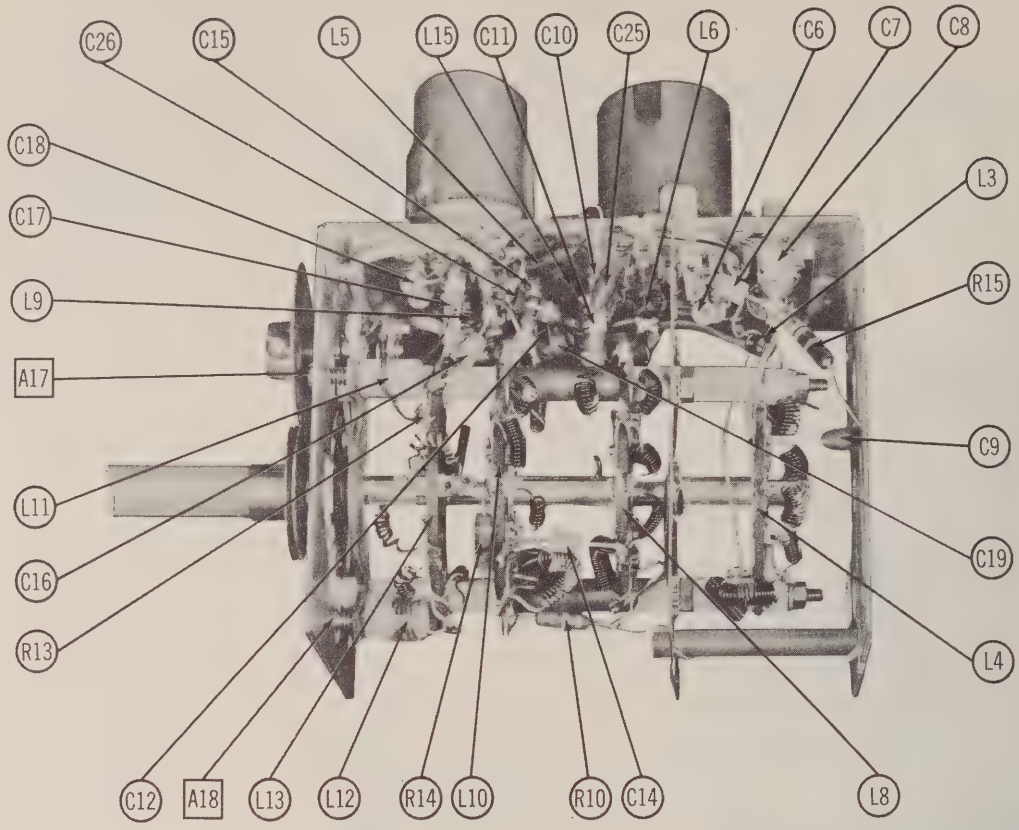
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	†1.2KΩ	460KΩ	INF	.1Ω	0Ω	INF	♦1.2Meg –120KΩ	0Ω	0Ω
V 2	6J6	†10.1KΩ	3.5KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	900KΩ	47Ω	0Ω	.1Ω	†3.2KΩ	†3.2KΩ	0Ω		
V 4	6CB6	900KΩ	47Ω	.1Ω	0Ω	†3.1KΩ	†3.1KΩ	0Ω		
V 5	6CB6	880KΩ	47Ω	0Ω	.1Ω	†2.9KΩ	†2.9KΩ	0Ω		
V 6	6BA6	2Ω	0Ω	.1Ω	0Ω	†3KΩ	†3KΩ	120Ω		
V 7	12AU7	540KΩ	8KΩ	4.8KΩ	.1Ω	.1Ω	†2.9KΩ	120KΩ	150Ω	0Ω
V 8	6AC7	0Ω	0Ω	200Ω	1 Meg	350Ω	†2KΩ	.1Ω	†4.9KΩ	
V 9	6AU6	680KΩ	0Ω	.1Ω	0Ω	†15KΩ	†15KΩ	0Ω		
V 10	6AL5	10KΩ	10KΩ	0Ω	.1Ω	INF	0Ω	INF		
V 11	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†250KΩ		
V 12	6V6GT	INF	.1Ω	†2.8KΩ	†7KΩ	1 Meg	40KΩ	0Ω	470Ω	
V 13	12AU7	16.5KΩ	2.2Meg	0Ω	.1Ω	.1Ω	†50KΩ	0Ω	270KΩ	0Ω
V 14	6SN7GT	2.5Meg	■2.7Meg	0Ω	50KΩ	†4.6KΩ	5.8KΩ	.1Ω	0Ω	
V 15	6S4	INF	3KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	■3.4KΩ
V 16	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	12KΩ	0Ω	12KΩ		
V 17	6SN7GT	5.7Meg	■25KΩ	1.2KΩ	145KΩ	■135KΩ	1.2KΩ	0Ω	.1Ω	
V 18	6BQ6GT	INF	0Ω	INF	†9.2KΩ	470KΩ	INF	.1Ω	50Ω	Top Cap ■24.3Ω
V 19	6W4GT	INF	INF	750KΩ	INF	†227Ω	INF	■26Ω	■26Ω	
V 20	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ■441Ω
V 21	5U4G	INF	18KΩ	INF	27.2KΩ	14KΩ	25.6Ω	INF	18KΩ	
V 22	21MP4	0Ω	Pin 6 †1.9KΩ	Pin 10 ■24KΩ	Pin 11 120KΩ	Pin 12 .1Ω				

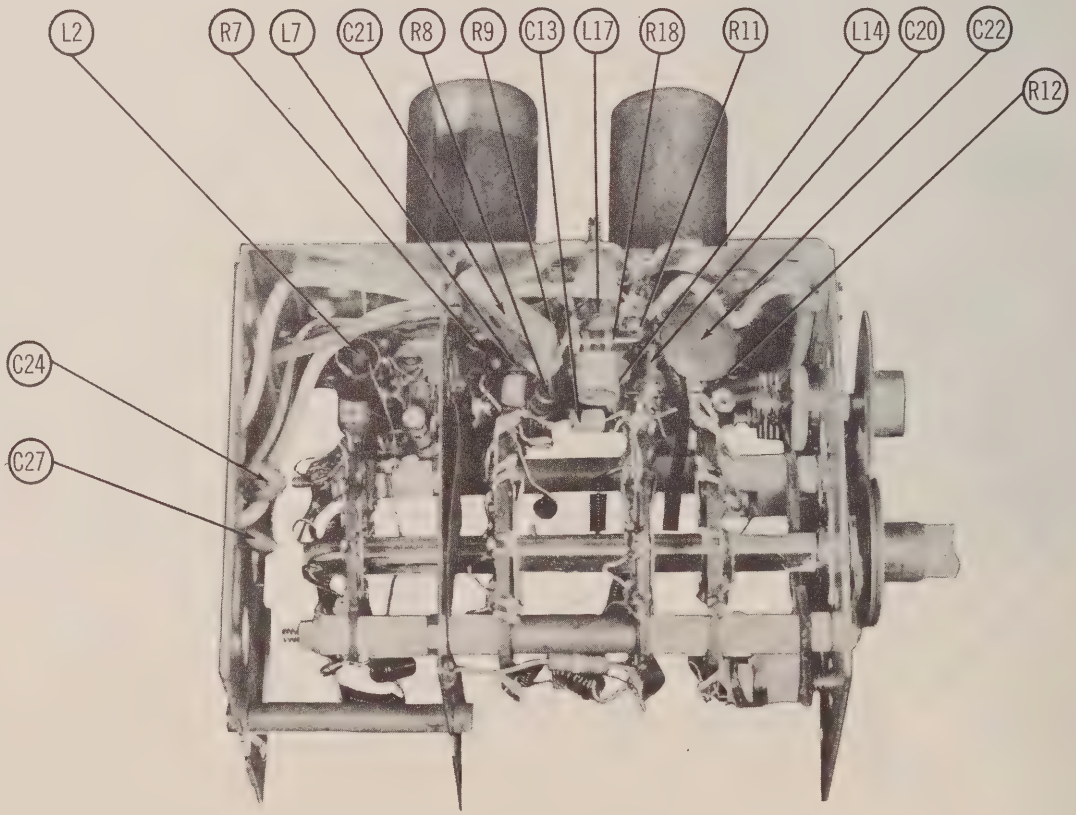
♦ MEASURED WITH M5 IN LOCAL POSITION
– MEASURED WITH M5 IN DISTANT POSITION
† MEASURED FROM PIN 8 OF V21
■ MEASURED FROM PIN 3 OF V19



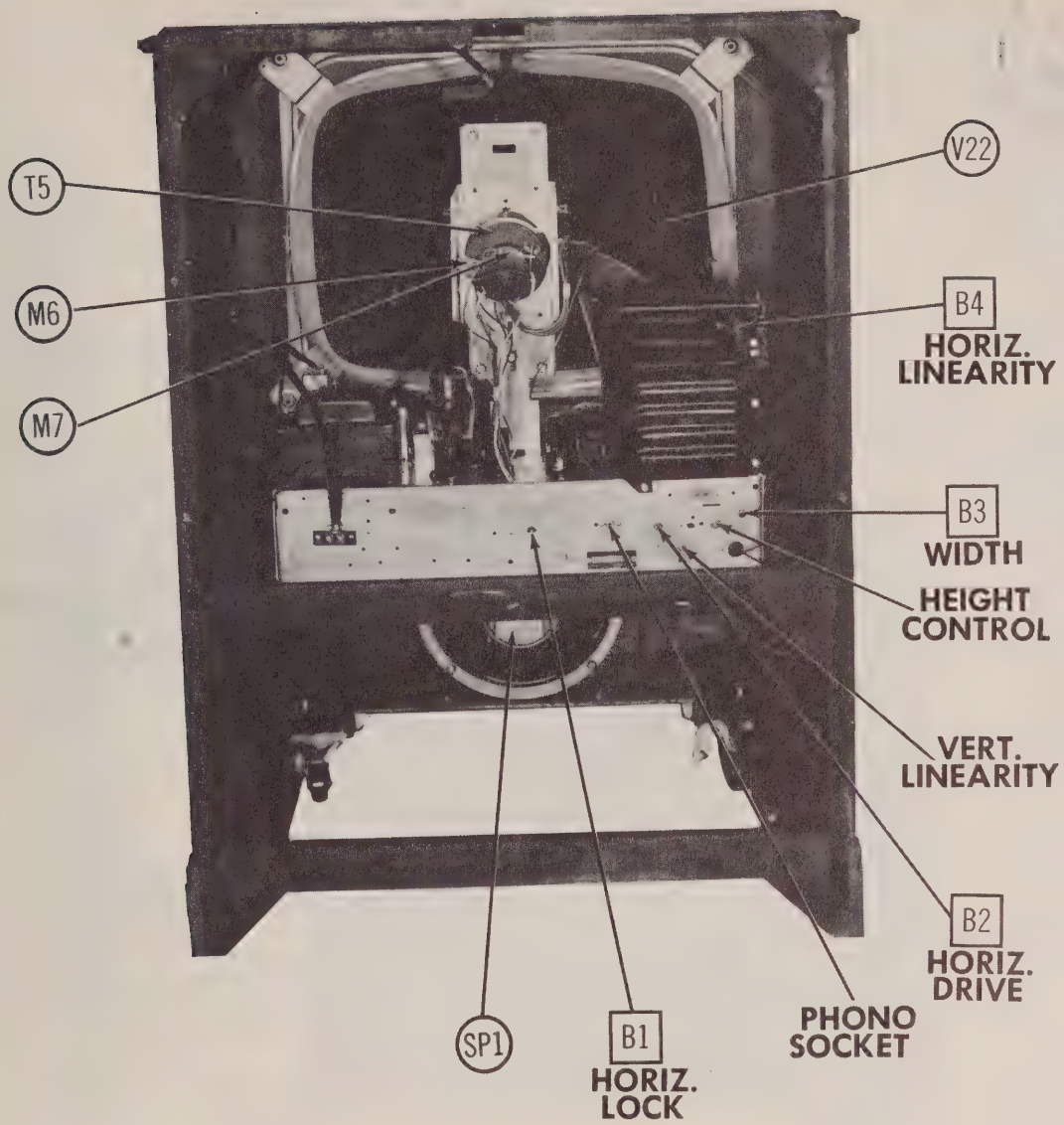
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the mid-point of its range and adjust the horizontal lock slug (B1) until the picture synchronizes horizontally.

Turn B1 clockwise until the picture loses sync, then counter clockwise until the picture just falls into sync.

Turn the horizontal hold control fully counter clockwise and momentarily switch to another channel and back again. The picture should be out of sync. Note the number of diagonal bars present in the picture. Repeat the procedure with the horizontal hold in extreme clockwise rotation and again note the number of diagonal bars. There should be the same number for both positions of the horizontal hold. Adjust B1 for this condition.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of a vertical white line or compression of the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See LOSS OF HIGH VOLTAGE

INSUFFICIENT SWEEP

Check by substitution V17, V18 and V21.
Check amplitude of signal at W13.

If Insufficient	If Sufficient
Check components of horizontal oscillator and coupling network between V17 and V18.	Check components of horizontal output tube and transformer.

DRIVE LINES

Substitute V18 and V19. Check coupling network between V17 and V18. Check T3 and associated components.

COMPRESSED AT LEFT SIDE

Check by substitution V18 and V19. Check components of shaping network between V17 and V18.

FOLDS

Substitute V19. Check associated components.

VERTICAL

LOSS OF SWEEP

Substitute V14 and V15. Check waveform at W7.

If Unsatisfactory	If Satisfactory
Check T2 and associated components. Check coupling network between V14 and V15.	Check R3B, T4 and T5B. Check other associated components.

INSUFFICIENT SWEEP

If adjustment of both the height and vertical linearity controls fail to give sufficient height, follow procedure outlined under LOSS OF SWEEP.

COMPRESSED AT TOP

Substitute V14 and V15. Check signal at W7.

If Unsatisfactory	If Satisfactory
Check components of V14 and network between V14 and V15.	Check T4 and Yoke.

COMPRESSED AT BOTTOM

Substitute V15 and check T4, C2C, and C3D.

WILD VERTICAL OSCILLATOR (Fig. 1)

Check C91 for open.

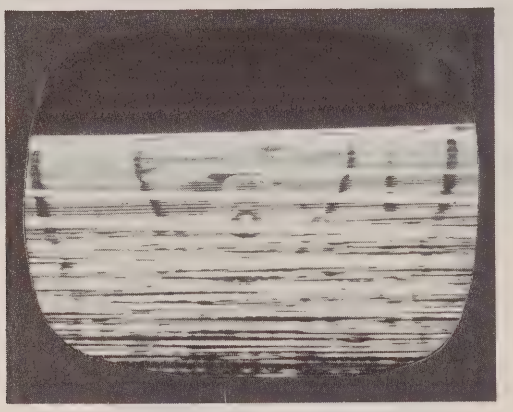


Fig. 1.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V13, V14, V16 and V17. Check L37 and other components associated with V16 and V17.

CRITICAL HOLD

Check by substitution V14, V16 and V17. Check horizontal discharge components. Check C105.

PULLING AND OUT OF PHASE

Check C101 for open.

VERTICAL

LOSS OF SYNC

Substitute V13 and V14. Check associated components especially the integrating network.

CRITICAL SYNC

Check by substitution V13, V14 and V15. Check associated components.

TRIGGERING

Check filament lead dressing around vertical oscillator grid leads.

VIDEO

SOUND BARS

Check adjustment of 4.5MC Trap (A16). Check local oscillator adjustment and video IF alignment.

POOR RESOLUTION

Check video IF alignment. If alignment cannot be brought within tolerance, substitute video IF tubes and check circuit components.

SMEAR

Substitute V7 and V8. Check associated components, particularly the peaking coils.

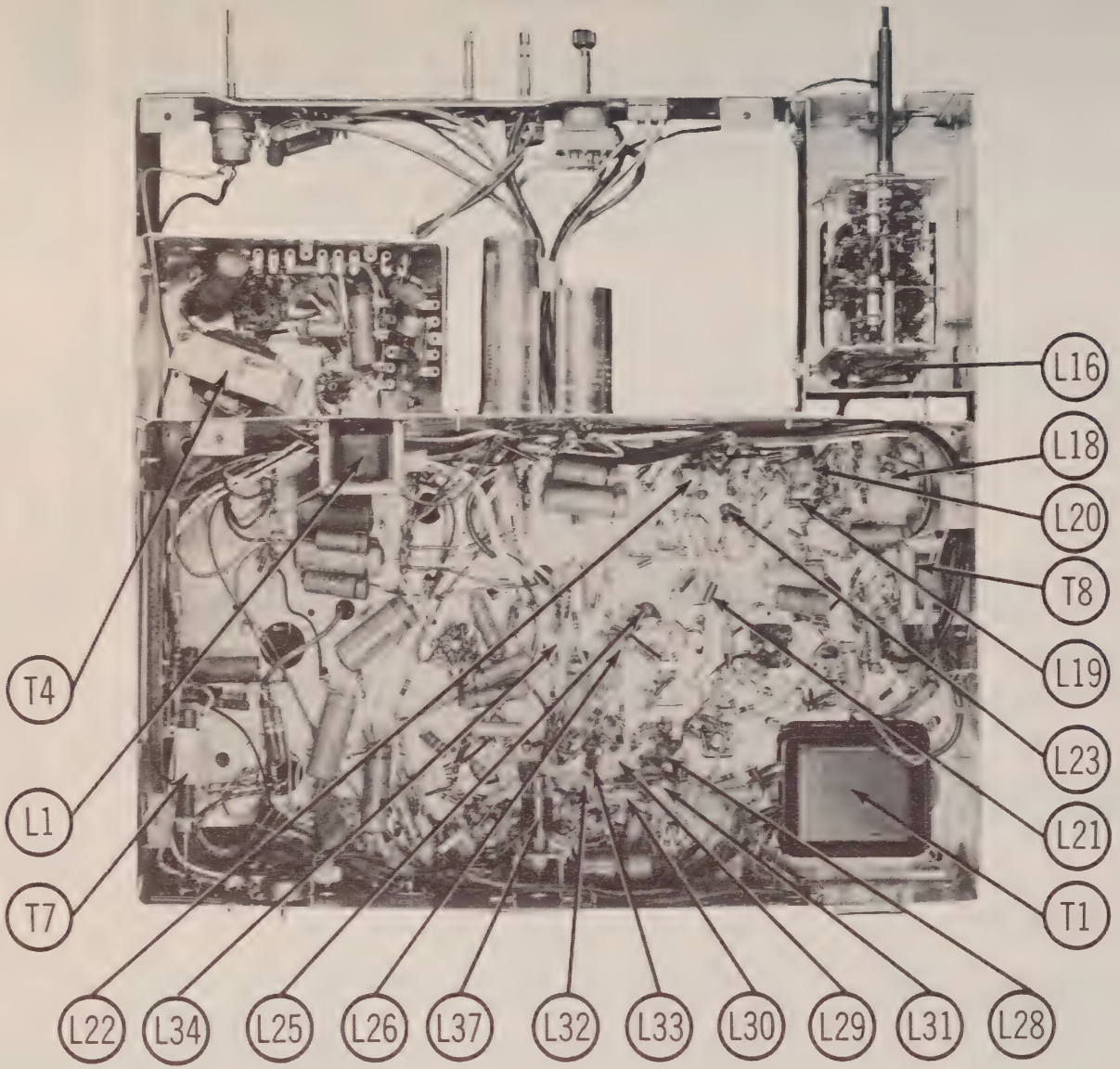
ONE WIDE BLACK BAR

Check tuner, Video IF, detector and video amplifier tubes for heater to cathode leakage.

POOR CONTRAST

Check signal at W2.

If Insufficient	If Sufficient
Substitute IF and video amplifier tubes. Check associated components.	Check picture tube and grid circuit components.



CHASSIS BOTTOM VIEW-TRANS AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. DEALERSHIP
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BZ7	6BZ7	9AJ	
B	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	4th Video IF Amp.	6BA8	6BA6	7BK	
V7	Video Detector - AGC Rectifier - Bound IF Amp.	12AU7	12AU7	9A	
V8	Video Output	8AC7	6AC7	8N	
V9	Limiter	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	AF Amplifier	6AV6	6AV6	7BT	
V12	Audio Output	6V6GT	6V6GT	7B	
V13	Sync Amplifier - Sync Separator	12AU7	12AU7	9A	
V14	Sync Phase Inv. - Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6S4	6S4	9AC	
V16	Horiz. AFC	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: SYLVANIA Part No.	RTMA BASE TYPE	NOTES
V22	21MP4	21MP4	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	±60	400	N22422-13	AFH4-88				FP431.4	TVL-4799	
B	±50	350		PR3450/40				TC382		
C	±5	450								
D	20	25								
C2A	±80	350	N22422-14	AFH3-182		CQ87		FP420.6	TVL-4711	
B	±50	350		PR3450/40		BR1501		TC75		
C	100	50								
D	±30	450								
C3	20	450	N25452	PRS450/20		BR2045A		TC75	TVA-1709	
C4	100	25	N25454	PRS25/100		BR1251A		TC2501	TVA-1207	
C5	4	150	N25453	PRS150/4		BR415		TC40	TVA-1402	
C6	4						NP0K-040			
C7	1.6									
C8	7.5									
C9	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C10	470									
C11	100			SH100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C12	.2									
C13	.06									
C14	1.6									
C15	470			SH470	D6-471		GP2K-471	UC-5347	5GA-T47	
C16	.39									
C17	10									
C18	1.5									
C19	150			SH100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C20	15			SH15	D6-150		GP1K-150	UC-5415	5GA-Q25	
C21	240	500		1469-00025		SR5T25		MCB240		
C22	5000			BPD-005	DD-502	TM5D5	801-005	DC-525	5HK-D5	
C23	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C24	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C25	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C26	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C27	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C28	5000			BPD-005	DD-502	TM5D5	801-005	DC-525	5HK-D5	
C29	36						NP0K-360			
C30	8.2									
C31	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C32	610									
C33	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C34	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C35	47									
C36	47			SH47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C37	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C38	610									
C39	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C40	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C41	39						N330K-390			
C42	47			SH47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C43	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C44	610									
C45	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C46	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	Note 1
C47	47			SH47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C48	2.2									
C49	36						N330K-360			
C50	610									
C51	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C52	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C53	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C54	56			SH56	D6-560		GP1K-560	UC-5468	5GA-Q68	
C55	5000			BPD-005	DD-502	TM5D5	801-005	DC-525	5HK-D5	
C56	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C57	68			SH68	D6-680	SR5Q7	GP1K-680	UC-5468	5GA-Q68	
C58	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C59	1000			BPD-001	DD-102	TM5D1	801-001	DC-531	5HK-D1	
C60	.22	200		P488-22		PTK4P22		PT4025	2TM-P22	
C61	.22	200		P488-22		PTK4P22		PT4025	2TM-P22	
C62	1000			BPD-001	DD-102	TM5D1	801-001	DC-531	5HK-D1	
C63	1000			BPD-001	DD-102	TM5D1	801-001	DC-531	5HK-D1	
C64	8.2						NP0K-5R2			
C65	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C66	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C67	47			SH47NP0	TCE-47		NP0K-470	ZT-5447	5TCC-Q47	
C68	.1	400		P488-1	DF-104	PTK4P1		PT401	4TM-P1	
C69	.047	400		P488-047	DF-503	PTK4S47		PT4147	4TM-S47	
C70	.22	400		P488-22		PTK4P22		PT4025	4TM-P22	
C71	68			SH68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C72	5000			BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C73	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C74	5000			BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C75	500	500		1468-0005	D6-501	5W5T5	GP2K-501	MC245	1FM-35	
C76	.001	600		P688-001	D6-102	PTK6D1	GP2L-102	PT621	6TM-D1	
C77	.047	200		P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C78	.0047	600		P688-0047	D6-472	PTK6D47	GP2-333-472	PT6247	6TM-D47	
C79	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MC241	1FM-33	
C80	.0047	600		P688-0047	D6-472	PTK6D47	GP2-333-472	PT6247	6TM-D47	
C81	.1	400		P488-1	DF-104	PTK4P1		PT401	4TM-P1	
C82	.01	400		P488-01	D6-103	PTK4S1	GP2-333-103	PT411	4TM-S1	
C83	.0047	600		P688-0047	D6-472	PTK6D47	GP2-333-472	PT6247	6TM-D47	
C84	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MC241	1FM-33	
C85	.047	490		P488-047	DF-503	PTK4S47		PT4147	4TM-S47	
C86	.047	400		P488-047	DF-503	PTK4S47		PT4147	4TM-S47	
C87	.47	200		P288-47		PJ2P5		PT405	2TM-P47	
C88A	.0022			P688-0022		PTK6D22		PT6222		
B	.0047			P688-0047	sPC-100	PTK6D47	s1405-01	PT6247	s103C1	
C	.0047			P688-0047		PTK6D47		PT6247		
C89	.0047	600								
C90	.0015	600		P688-0015	D6-152	PTK6D15	GP2L-152	PT6215	6TM-D15	
C91	.047	600		P688-047	DF-503	PTK6S47		PT6147	6TM-S47	
C92	.1	600		P688-1	DF-104	PTK6P1		PT601	6TM-P1	
C93	.022	600		P488-022		PTK4S22		PT4122	4TM-S22	
C94	.1	1000		P1088-1		PTE1SP1		PT1501	MB-P1	
C95	.1	400		P488-1	DF-104	PTK4P1		PT401	4TM-P1	
C96	.047	600		P688-047	DF-503	PTK6S47		PT6147	6TM-S47	
C97	.001	600		P688-001	D6-102	PTK6D1	GP2L-102	PT621	6TM-D1	
C98	.001	600		P688-001	D6-102	PTK6D1	GP2L-102	PT621	6TM-D1	
C99	.01	400		P488-01	D6-103	PTK4S1	GP2-333-103	PT411	4TM-S1	
C100	.0047	600		P688-0047	D6-472	PTK6D47	GP2-333-472	PT6247	6TM-D47	
C101	.047	400		P488-047	DF-503	PTK4S47		PT4147	4TM-S47	
C102	100	500		1469-0001		5R5T1		MCB235	MB-S1	
C103	.22	600		984-25		PTE6P25		PT6025	6TM-P25	
C104	3900	500		1464-004		1DR5D4		MCB463	MB-34	
C105	330	500		1469-00035						
C106	330	500		1469-00035						
C107	270	500		1469-0003		5R5T3		MCB341	MB-33	
C108	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C109	.47	200		P288-47	DF-104	PJ2P5		PT405	2TM-P47	
C110	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C111	.033	600		P688-033				PT6133		
C112	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C113	.01	400		P488-1	DF-104	PTK4P1		PT401	4TM-P1	
C114	500	20000		HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C115	.01	600		689ZX-01		PJ6S1		PT611	6TM-S1	
C116	.01	600		689ZX-01		PJ6S1		PT611	6TM-S1	
C117	82	2000								

Note 1. Not used in all Models.
♦ Items C88A, C88B, C88C, R81A, R81B, R81C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω		N22464-49	QJ-427*			UP152L	Contrast-Panel
B	2500Ω						UR254A	Volume-Rear
C	Switch						UB-26	Attach to R1B
R2A	100KΩ		N22464-40	QJ1-128	AG-49-8	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R2A
R3A	50KΩ		N22464-42	QJ-436**			UF54L	Horiz. Hold-Panel
B	2.5 Meg.						UR26L	Vert. Hold-Rear
R4	2 Meg.		N22464-35					Tone & TV-Phono, Sw.
R5A	2.5 Meg.		N22464-43	QJ1-239	AG-84-8	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	3000Ω		N22464-41	QJ1-113	AG-15-8	AB-8	U-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-109 & P1-126 (Panel), B13-130 & R1-216 (Rear) & SWITCH T6-1.
** CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B11-123 & P9-112 (Panel), B11-239 & R12-123 (Rear).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R7	1 Meg			BTS-470	
R8	470Ω				
R9	750KΩ				
R10	220KΩ				
R11	8200Ω			BTS-8200	
R12	15KΩ				
R13	8200Ω			BTS-8200	
R14	10KΩ				
R15	4700Ω			BTS-4700	
R16	3300Ω			BTS-3300	
R17	1000Ω			BTS-1000	
R18	470Ω			BTS-470	
R19	15KΩ				
R20	47Ω				
R21	1000Ω			BTS-1000	
R22	3300Ω			BTS-3300	
R23	150Ω			BTS-150	
R24	18KΩ-5%				
R25	47Ω				
R26	1000Ω			BTS-1000	
R27	3300Ω			BTS-3300	
R28	150Ω			BTS-150	
R29	1000Ω			BTS-1000	
R30	47Ω				
R31	1000Ω			BTS-1000	
R32	22KΩ				
R33	120Ω			BTS-120	
R34	1000Ω			BTS-1000	
R35	150Ω			BTS-150	
R36	220KΩ			BTS-220K	
R37	560KΩ			BTS-560K	
R38	220KΩ			BTS-220K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R39	560KΩ			BTS-560K	
R40	100KΩ			BTS-100K	
R41	3300Ω-5%			BTS-3300 5%	
R42	100Ω				
R43	220KΩ			BTS-220K	
R44	4700Ω			BTS-4700	
R45	1 Meg			BTS-1 Meg	
R46	150Ω			BTS-150	
R47	4700Ω-5%	2		BTS-4700-5%	
R48	10KΩ			BTS-10K	
R49	270KΩ			BTS-270K	
R50	220KΩ			BTS-220K	
R51	220KΩ			BTS-220K	
R52	220KΩ			BTS-220K	
R53	100KΩ			BTS-100K	
R54	470Ω	1		BTA-470	
R55	120KΩ				
R56	150Ω			BTS-150	
R57	1000Ω			BTS-1000	
R58	680KΩ			BTS-680K	
R59	12KΩ	1		BTA-12K	
R60	2200Ω	2		BTB-2200	
R61	2.2Meg	1		BTS-2.2Meg	
R62	47KΩ	1		BTA-47K	
R63	100Ω-5%	2		BTB-100-5%	
R64	10KΩ-5%	2		BTB-10K-5%	
R65	10Meg			BTS-10Meg	
R66	150KΩ			BTS-150K	
R67	100KΩ			BTS-100K	
R68	1 Meg	1		BTS-1 Meg	
R69	4700	1		BTA-470	
R70	2200Ω	2		BTB-2200	
R71	2.2Meg	1		BTS-2.2Meg	
R72	47KΩ	1		BTA-47K	
R73	22KΩ			BTS-22K	
R74	270KΩ			BTS-270K	
R75	560KΩ			BTS-560K	
R76	47KΩ			BTS-47K	
R77	100Ω-5%			BTB-100-5%	
R78	4700Ω			BTS-4700	
R79	820Ω			BTS-820	
R80	1800Ω			BTS-1800	
R81A	22KΩ			BTS-22K	
B	8200Ω			BTS-8200	
C	8200Ω			BTS-8200	
R82	22KΩ			BTS-22K	
R83	1.5Meg-5%	1		BTS-1 Meg-5%	
R84	1.5Meg-5%	1		BTS-1 Meg-5%	
R85	470KΩ			BTS-470K	
R86	100KΩ			BTS-100K	
R87	10Meg			BTS-10Meg	
R88	12KΩ-5%	1		BTS-12K-5%	
R89	2.2Meg	1		BTS-2.2Meg	
R90	1500Ω			BTS-1500	
R91	22KΩ			BTS-22K	
R92	560Ω			BTS-560	
R93	560Ω			BTS-560	
R94	10KΩ			BTS-10K	
R95	8200Ω			BTS-8200	
R96	100KΩ-5%			BTS-100K-5%	
R97	100KΩ-5%			BTS-100K-5%	
R98	4.7Meg			BTS-4.7Meg	
R99	1 Meg			BTS-1 Meg	
R100	12KΩ	2		BTB-12K	
R101	8200Ω	1		BTA-8200	
R102	1200Ω	1		BTA-1200	
R103	100KΩ-5%	1		BTS-100K-5%	
R104	120KΩ	1		BTA-120K	
R105	15KΩ	1		BTA-15K	
R106	8200Ω	1		BTS-8200	
R107	470KΩ	1		BTS-470K	
R108	47Ω	1			
R109	50Ω	5		1 3/4A-50	
R110	27KΩ	2		BTB-27K	
R111	27KΩ	2		BTB-27K	
R112	27KΩ	2		BTB-27K	
R113	1800Ω	2		BTB-1800	
R114	3.9Ω	1			
R115	220KΩ	2			
R116	220KΩ	2			
R117	220KΩ	3			
R118	200Ω	15			Note 1
R119	200Ω	15			Note 1
R120	6800Ω	1		BTS-6800	
R121	220Ω	20		1 3/4A-2250	Note 2
R122	6800Ω	2		BTB-6800	Note 2
R123	6800Ω-5%	2		BTB-6800	Note 2
R124	6800Ω-5%	2		BTB-6800	Note 2
R125	3.9Ω	1			
R126	220KΩ	1		BTS-220K	

♦ Items R81A, R81B, R81C, C88A, C88B, C88C are combined in one unit.
Note 1. Some models may use a single 100Ω (30 Watt) resistor in this application.
Note 2. Some models may use a single 1800Ω(20 Watt) resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC	675VCT	5VAC	6.3VAC	N-25433	P-8168 ②	P-3078	TP-356 ①		
	④ 1.92	.240ADC	③3A	0.2A		②				
				SEC. 4						
				6.3VAC						
				④8.3A						

① Parallel the two 6.3VAC 5A windings and use as Sec. 4.
② Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	190Ω	1050Ω	N-22446-1	A-8122 ①	A-4003	TBO-3 ①	A-97T	208T9	Vert. Osc. Trans.
T3	437Ω tap ④ 20Ω	360Ω tap ④ 3.7Ω,11.7Ω, 21.7Ω	N-24989		HVO-9 ②	TFB-13	D-19	225T1 ③	Horiz. Output Trans.
		SEC. 2							
		0Ω							
T4	1580Ω tap ④ 4.2Ω		N-24990-1	A-8141	A-3039	TBO-12	A-104X	226T1	Vert. Output Trans.
T5	240		N-24807						
A	48Ω				DY-11 ①	TY-7 ①	Y-19 ①		Horiz. Deflection Coils
T6	5.7Ω tap ④ 1.4Ω		N-40028				WC-12	209R1	Vert. Deflection Coils Horiz. Lin. Coil
T7	18Ω	1Ω	N-40027						Width Coil

① Drill one new mounting hole.
② Remove lin. coil center tap and connect lin. coil in plate circuit.
③ Use original deflection coil network.
④ See instruction sheet packed with unit for terminal connections.

TRANSFORMER (AUDIO OUTPUT)

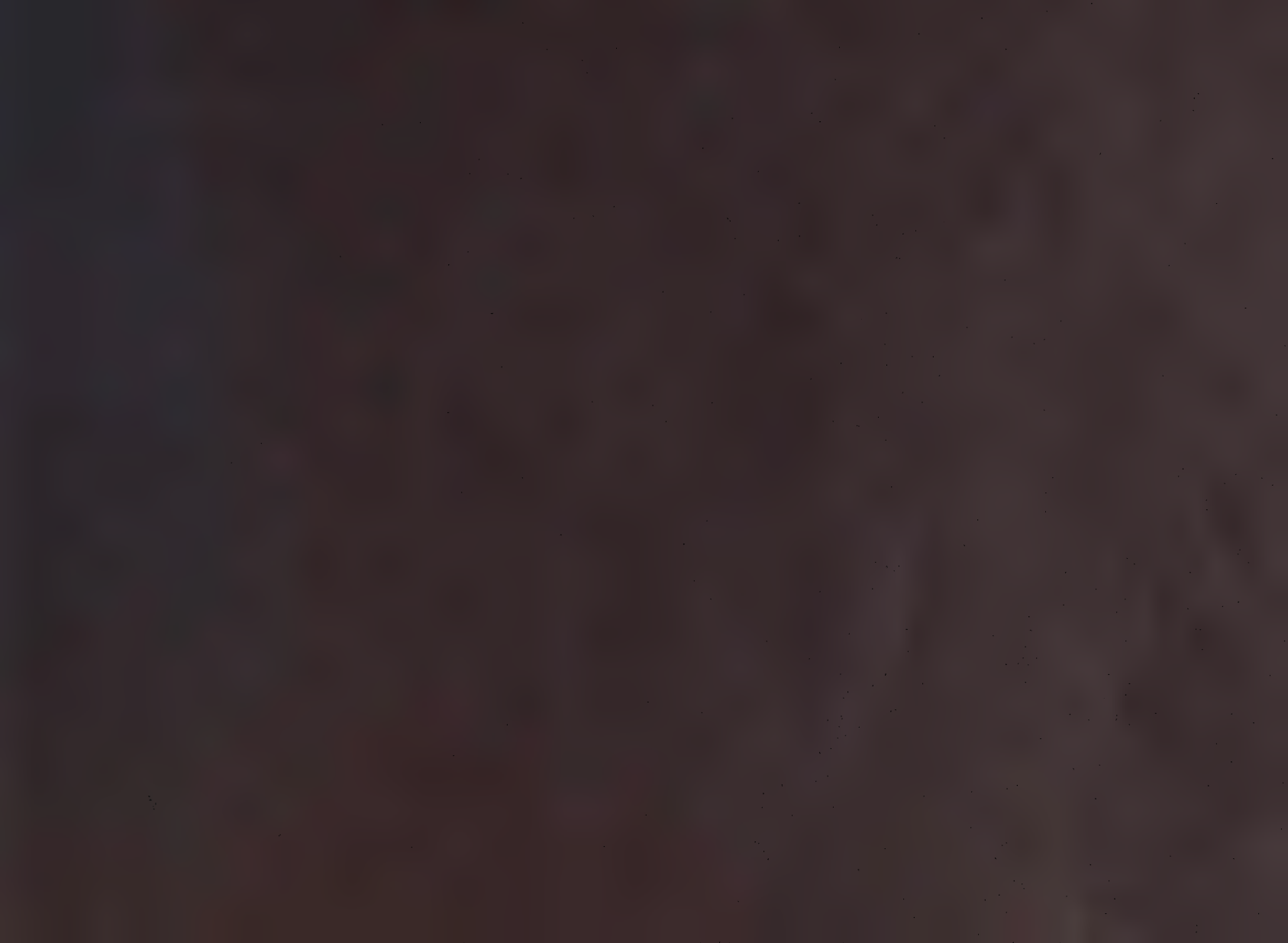
ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	5.6KΩ	3.4Ω	504Ω	.79Ω	N24778-1	A3877 ①	A-3019	RO-9 ①	S-3X ①	

① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: VIKING PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	10"	PM	3.4Ω	N25519	10J11	10A31	

SILVERTONE
MODEL 3174 (Ch. 132.035-2)



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.150A	127Ω	2.9HY	C-23087-1 N-23088-1 ②	C-2327 ①	C-2994	TR-3300 ①	C-13X ①

① Drill one new mounting hole.
② Alternate filter choke.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	SILVERTONE PART No.	MILLER PART No.	MEISSNER PART No.	
L2	Ant. Trans.	0ΩCT	0Ω				
L3	Ant. Coil	0Ω					Channel 13
L4	Ant. Coils	0Ω					
L5	Fil.choke	0Ω		N22456			
L6	Neutr. Coil	0Ω					
L7	RF Coil	0Ω					Channel 13
L8	RF Coils	0Ω					
L9	Mixer grid. Coil	0Ω					Channel 13
L10	Mixer grid. Coils	0Ω					
L11	Osc. Plate Coil	0ΩCT					
L12	Osc. Coil	0Ω					Channel 6
L13	Osc. Coils	0Ω					
L14	Feedback Coil	1.3Ω					
L15	Fil. Choke	0Ω		N22456			
L16	Fil. Choke	.2Ω					.56 Microhenries (IRC part #CL-1)
L17	Conv. Plate	.2Ω					
L18	1st Video IF	.1Ω		N25410		17-4500	Includes Trap
L19	Fil. Choke	0Ω		N23095	4604		1.44 Microhenries
L20	2nd Video IF	.1Ω		N25411		17-4501	Includes Trap
L21	Fil. Choke	0Ω		N23095	4604		1.44 Microhenries
L22	3rd Video IF	.1Ω		N25412		17-4502	Includes Trap
L23	RF Choke	2Ω		N22500-19			20 Microhenries, Wound on 18KΩ Resistor
L24	4th Video IF	.1Ω		N25413		17-4503	Includes Trap
L25	RF Choke	2Ω		N22500-19			20 Microhenries, Wound on 18KΩ Resistor
L26	Cathode Trap	0Ω		N25415	6219	20-1045	
L27	5th Video IF	.1Ω	.2Ω	N25474		17-4504	Includes Trap
L28	RF Choke	2Ω		N22500-8			20 Microhenries, Wound on 12KΩ Resistor
L29	Series Peaking Coil	2.2Ω		N25468-6	6176	19-3036	40 Microhenries
L30	Series Peaking Coil	.2Ω		N25916	6175	19-3001	1.7 Microhenries
L31	Shunt Peaking Coil	3.8Ω		N25468-5	6177	19-3093	100 Microhenries
L32	Series Peaking Coil	5.5Ω		N25468-8	6181*	19-4250	250 Microhenries, Wound on 16KΩ Resistor
L33	4.5 MC Trap	1Ω		N25609	1470	20-1004	
L34	Shunt Peaking Coil	6.2Ω		N25468-1	6180	19-3180	185 Microhenries
L35	Sound IF	1.4Ω		N25543	1470A ■	17-1031	
L36	Ratio Det.	3.4Ω	.3Ω CT	N25322	1468	17-1033	Tertiary Winding-.85Ω
L37	Horiz. Osc.	75Ω		N23449	6210	19-1576	

* Parallel with 16KΩ Resistor
■ Add 30 MMF-Capacitor externally

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SILVERTONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG P/T	1/4A 250V	N22493		318.250 (3AG-1/4 A P/T)		GJV 1/4	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					SILVERTONE PART No.		
M2	Bayonet	6-8	.15	Brown			Type No. #47

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	RF Tuner	N25734-2	
M4	Trap	N25963	IF and FM
M5	Switch	N25525	Local-Distance
M6	Centering Magnet	N25626	
M7	Ion Trap	N25662-2	
B2	Trimmer Capacitor		Horizontal Drive, 40-370MMF
	Back Cover Assy.	N25991-2	
	Door (Control)	N40210-2	
	Escutcheon	D25969	
	Safety Glass	N40454	
	Mask	N40455	
	Knob	N40212-1	Channel Selector
	Knob	N40215-1	Fine Tuning
	Knob	N40214-1	Contrast
	Knob	N40213-1	Off-On Volume
	Knob	N24699-2	Tone (TV-Phono Selector)

TROUBLE SHOOTING AIDS (CONT.)

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V9, V10, V11 and V12. Check alignment of ratio detector and sound IF stages. Check video IF alignment.

BUZZ

Adjust ratio detector secondary for minimum buzz. If still noticeable, substitute V10 and readjust.

DISTORTED

Check audio amplifier stages V11 and V12, using audio signal generator and scope.

If Undistorted	If Distorted
Check adjustment of ratio detector and sound IF stages. Check video IF alignment.	Check components of amplifier stage where distortion occurs.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V17, V18, V19 and V20. Check 1/4 amp. fuse located in high voltage cage. Check waveform at W13.

If Unsatisfactory	If Satisfactory
Check components of horizontal oscillator.	Check T3, T6, T7 and other components of horizontal output stage. Check high voltage filter network.

WEAK HIGH VOLTAGE

Substitute V17, V18, V19, V20 and V21. Follow procedure outlined under LOSS OF HIGH VOLTAGE.

BLOOMING

Substitute V18, V19, V20 and V21. Check high voltage filter. Check picture tube.

POWER

SMALL RASTER, WEAK SOUND

Substitute V21. Check B plus circuit for shorts. Check line voltage.

DIM PICTURE

Measure B plus,

If Low	If Normal
Check for shorts or leaky capacitor	Check boost B plus circuit. Check picture tube.

GENERAL

NO PICTURE, NO SOUND, NO SNOW

Check by substitution V1, V2, V5, V6 and V7. Check associated components.

WEAK PICTURE, NO SOUND

Substitute V3 and V4. Check associated components.

SOUND, BUT NO PICTURE

Substitute V8 and check components.

INTERMITTANT STREAKS

Check high voltage circuit for corona discharge and arcing.

The Trouble-Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 6 metal screws. Remove metal frame holding safety glass.

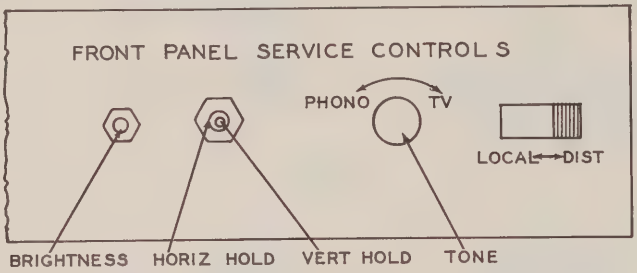
Remove safety glass. Hold safety glass during this operation.

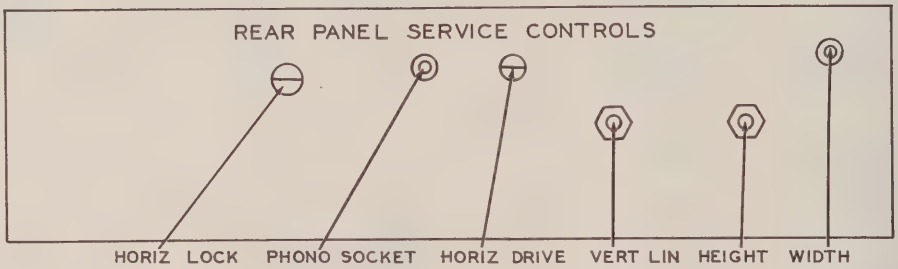
Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal lock slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L36) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for Horiz. Sweep Circuit protection. (See tube placement chart).

CENTERING

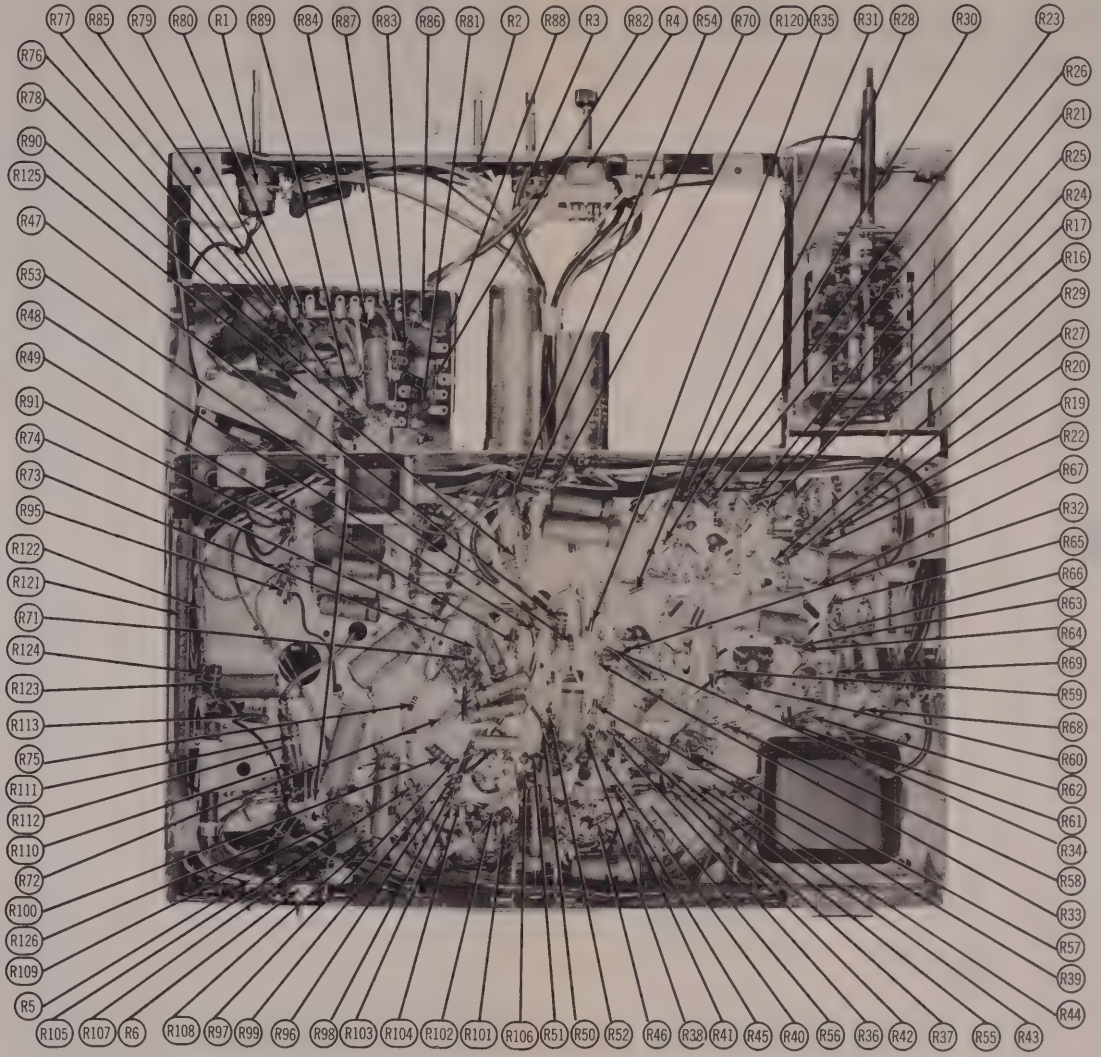
Centering is accomplished mechanically by adjusting a magnetic ring around the neck of picture tube located flush against the yoke. Turn the knurled knob and at the same time rotate the ring around the tube until the picture is properly centered.

BUILT-IN ANTENNA TUNING

Built-in antenna can be adjusted from rear of the cabinet. Adjust for a picture of maximum contrast and minimum ghost.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 6 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect built-in antenna, speaker, CRT socket and HV lead.
4. Remove 1 metal screw. Disconnect yoke plug.
5. Remove 1 metal screw from yoke bracket. Remove 6 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

WEBSTER-CHICAGO
MODELS 121, 122, 123, 124, 125

Figure 1

GENERAL INFORMATION

The Webster-Chicago Model 121 basic mechanism is a three speed, automatic record changer. It provides automatic playing of up to a 1" stack of 7-inch, 10-inch and 12-inch records at speeds of 33-1/3, 45 or 78 rpm.

After the last record has been played the tone arm will return to its rest position and the changer will automatically shut off.

The motor switch is a function of the tone arm position and the power is off when the tone arm is on the tone arm rest. Placing the arm on a record or depressing the "Reject" button starts the motor.

Manual operation is provided for playing "badly warped" records, "nonstandard" records or "home recordings."

Model 121 is designed for 105-120 volt operation. If it is desired to operate the changer on 50-cycle current, a 50-cycle adaptor kit is available. When ordering adaptor specify motor number (stamped on motor).

Manufactured by

Webster-Chicago Corporation
5610 Bloomingdale Avenue
Chicago 39, Illinois

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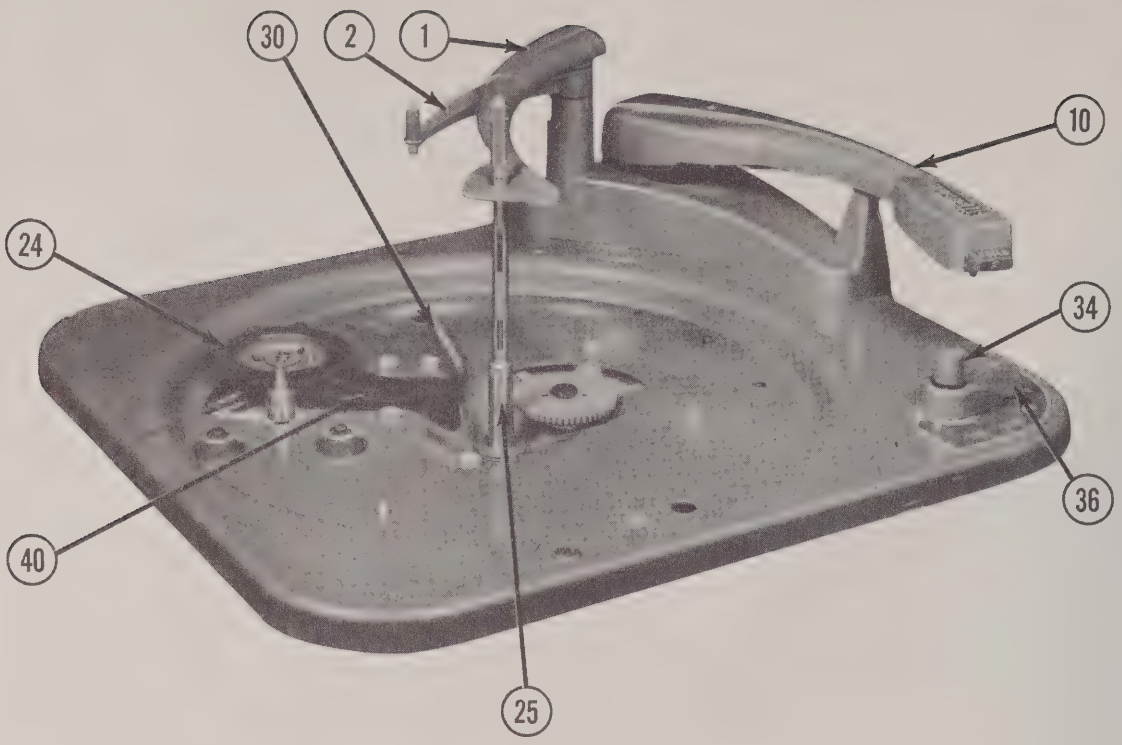

Figure 2

AUTOMATIC OPERATION

1. Lift the record ballast arm (1) and swing it away from the spindle and exert a slight downward pressure until it "latches."

2. Place up to a 1" stack of any one size of records on the spindle (25). Hold the records parallel to the turntable and swing the record ballast arm back to the spindle, allowing it to drop in position on top of the records. The index finger arm (5) will stay in the outward position until the change cycle starts. It will then move in to feel the diameter of the record and automatically index the needle to the proper playing position.

3. Rotate the needle tip selector to the correct position for records being played.

4. Move the speed-selector lever (36) to the speed corresponding to the type record to be played.

5. Depress "Reject" button (34) and hold down until the tone arm starts to move. This puts the changer into automatic operation, thus playing the entire stack of records.

To Reject a Record -

To reject any record which is playing in the automatic position, depress the "Reject" button and release.

MANUAL OPERATION

1. Lift the record ballast arm (1) and swing it and the index finger (5) away from the spindle.

2. Turn the needle-tip selector to the correct position for records being played.

3. Move the speed selector lever (36) to the correct speed.

4. Place the record to be played on the turntable.

5. Place the tone arm gently on the record. To stop the mechanism at any time place the tone arm on its rest.

CHANGE CYCLE

A 4 pole shaded motor is used to drive the changer mechanism. The power is transmitted to the turntable by idler wheel (24). Turntable speed is determined by the positioning of idler wheel (24) on one of the three "steps" of the drive sleeve on the rotor shaft. When speed selector lever (36) is turned to "33" the idler wheel is positioned on the "33 step" or contacts the smallest diameter portion of the sleeve. Turning the speed selector lever to "78" positions the idler wheel on the largest diameter of the sleeve.

This changer is provided with what is known as a velocity type trip. The change cycle is started by the faster inward motion of the tone arm when the needle enters the eccentric groove at the end of a record.

As the tone arm tracks on the record toward the spindle, it carries the velocity trip arm (80) with it through the frictional condition set up by clutch weight (78). The velocity trip arm (80) gradually approaches the velocity trip lever (81) and, upon contact, carries the lever with it. However, the main actuating gear (73) has four equally spaced projections on its circumference which strike the velocity trip rubber bumper (81A) as the gear revolves. This action forces

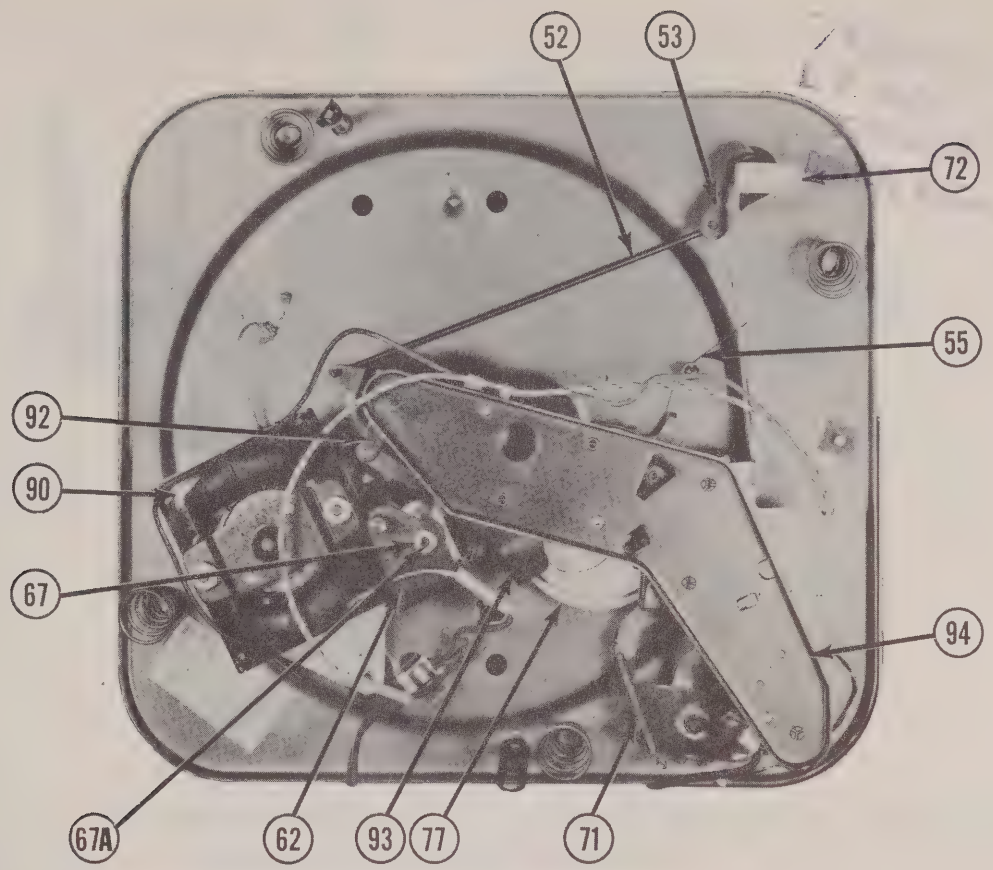

Figure 3

the velocity trip arm (80) and the velocity trip lever (81) back away from the tripping point. The above action does not affect the tone arm because the friction set up by the friction clutch is not sufficient to hinder the tracking of the needle. When the needle enters the eccentric groove at the end of a record, the velocity trip arm (80) moves at such speed that it carries the velocity trip lever (81) back away from the tripping point between the projections on the main actuating gear (73). This releases actuating pawl (77A) (Figure 4) on main cam (77), allowing it to engage the main actuating gear (73) which is continuously rotating with the motor driven turntable. Main cam (77) now engaged with main actuating gear (73) drives the changer through the change cycle.

The main cam (77) has two cam surfaces on its lower side. The inside cam surface forms a track in which the stud of the tone arm raising lever (88) rides. The main cam (77) actuates raising lever (88) causing it to raise and pivot outward. This motion is transmitted to the tone arm by the clutch action between the raising disc (86) and the set-down plate (85) which are attached to the tone arm shaft (21). The tone arm is now raised and moved away from the turntable.

When the tone arm has reached its farthest outward excursion the roller on the spindle actuating lever (93) rides up the outer cam surface on main cam (77). This action lifts the front of spindle actuating lever (93), which in turn, contacts the spindle actuating rod. This upward movement forces the actuating rod up into the spindle moving the push-off finger forward, resulting in the lowering of a record to the turntable.

At this time the raising lever (88) (following the recessed contour of the main cam) carries the set down plate (85), and consequently the tone arm, inward. This travel is stopped when the 7", 10", or 12" extension of the plate contacts the stop ear on the set-down disc assembly (69). The position of this ear was predetermined when the record (now on the turntable) rested on the spindle step and influenced the position of the index arm (5). The stop ear, being a function of the index arm, stops the set-down plate (85) at the proper point so when the raising lever (88) returns and lowers to its normal position, the tone arm lowers and correctly sets down on the lead-in groove of the record.

The hook on the velocity trip (81) now catches the cycle actuating pawl (77A Figure 4) and releases it from main actuating gear (73) which is continuously rotating with the motor driven turntable, thus completing the change cycle.

As soon as the last record has been dropped, the index finger arm (5) moves all the way in to the record ballast arm (1) which, in turn, rotates the set-down disc assembly (69). When the last record has finished playing, the change cycle starts again; however, this time, the flange (point "B" on exploded view) on the set-down disc assembly (69) prevents the tone arm from moving in over the turntable. As a result, the tone arm comes to a rest on the arm rest and the set-down plate (85) contacts the AC switch, thus shutting the changer off.

ADJUSTMENTS

Tone Arm Height -

The vertical movement of the tone arm is con-

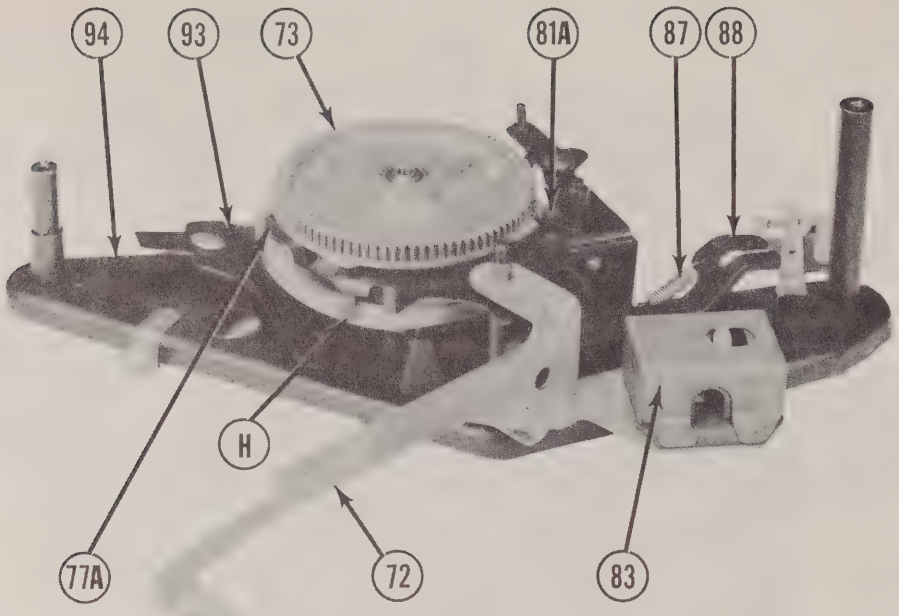

Figure 4

trolled by the contour of raising lever (88). Correctly adjusted, the tone arm should clear the tip of the tone arm rest by 1/16" to 1/8" during the change cycle.

1. For adjustment of tone arm height, a set screw (9) is accessible through a hole on the top and at the rear of the tone arm.

2. Clockwise turning of the adjustment screw will raise the arm and counterclockwise turning will lower it. (CAUTION: Do not turn excessively.)

3. Lift the tone arm and place a dab of plastic cement on the base of the screw after the correct adjustment has been obtained. (Do not use a permanent type of cement and be sure it is not placed on the shoulder or end of the screw.)

Needle Set-Down -

1. Place a 7" record on the spindle and allow the index finger arm (5) to rest against the edge of the record.

2. With speed selector knob (36) in "N" position, press the reject button and revolve turntable by hand. Stop rotation of turntable when needle is approximately 1/4" above the record.

3. Check to see if the needle is directly above the lead-in groove of the record. If not, adjust by turning screw (14). (Clockwise turning of screw will move tone arm away from spindle.)

4. If adjustment on 7" is correct, 10" and 12" set-down will also be correct.

Needle Pressure Adjustment -

1. Lift the tone arm to a vertical position.

2. Insert a small steel rod in the hole of the spring mounting stud (point "A" on exploded view). Turn the mounting stud downward to increase, or upward to decrease the needle pressure. CAUTION: A slight movement of the stud will have great effect. An accurate gauge is necessary to insure correct needle pressure. Most cartridges require 9 to 11 grams for proper tracking and best reproduction.

Spindle Adjustment -

If the spindle push-off finger fails to release a record, turn the spindle adjusting nut, located on bottom of spindle assembly, 1/4 turn counterclockwise. If the bottom record still does not drop, continue turning the adjusting nut counterclockwise, 1/4 turn at a time, until the record is pushed off.

CAUTION: Do not turn adjusting nut too far or the changer will stall in cycle.

TROUBLES

Fails to Change Records Automatically -

1. Dirt or grease on friction clutch (78). Clean with alcohol so trip arm (80) may move freely.

2. Velocity trip (81) binding on its mounting post.

3. Burr on the end of actuating pawl (77A Figure 4) or on the underside of the hooked end of velocity trip (81).

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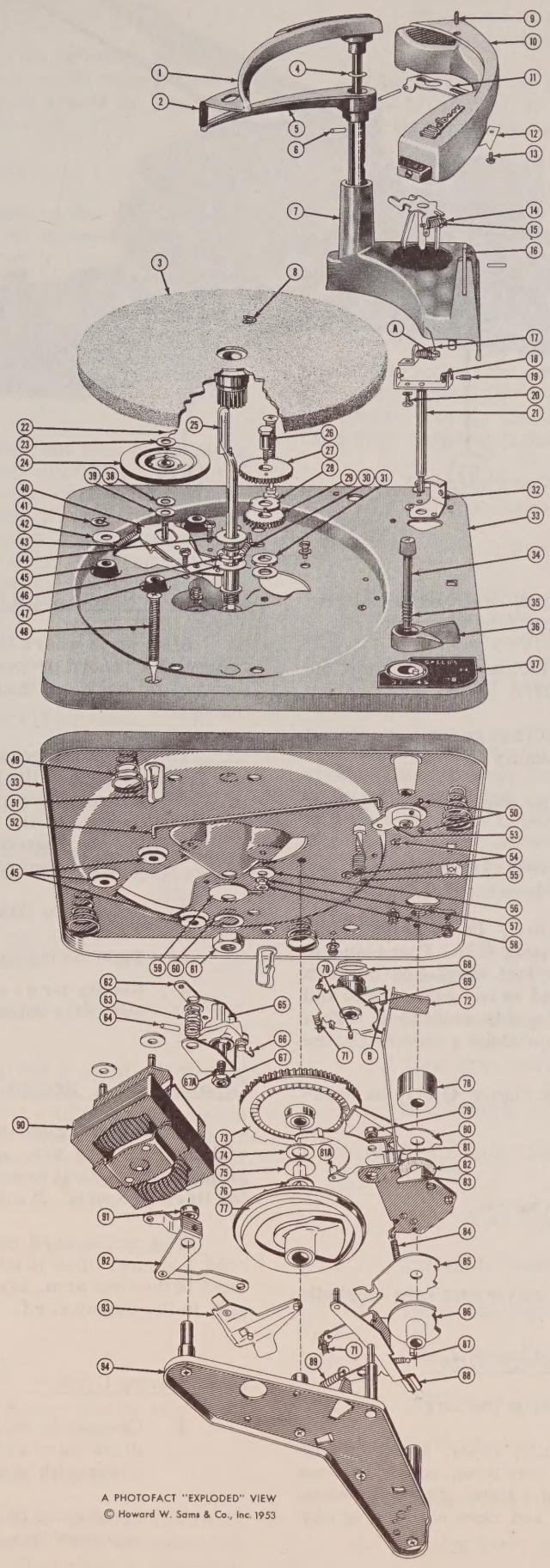
3924 MENDE ST.
DENVER, COLO.



A PHOTOFACT "EXPLODED" VIEW
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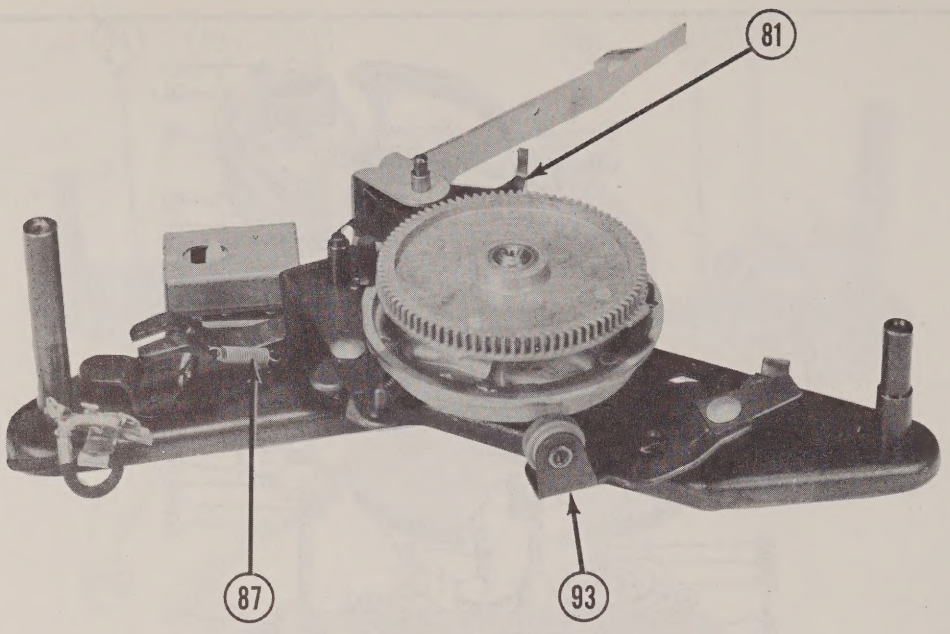

Figure 5

4. Velocity trip arm (80) bent and not hitting the ear of the velocity trip.

5. Velocity trip arm (80) may be catching on AC switch cover (83).

6. Velocity trip arm (80) has become positioned on wrong side of velocity trip ear.

7. Rubber bumper (81A) damaged - needs replacing.

8. The end of velocity trip (81) catching on the top of raising lever bracket (88).

9. Velocity trip (81) may be rubbing on the underside of drive gear (73). There should be approximately 1/16" clearance between the velocity trip and drive gear. Bend end of trip to adjust for this clearance. (This condition can also produce a chatter during operation.)

10. Actuating pawl (77A Figure 4) may be sticking.

11. Defective record.

12. Badly bent or worn needle.

Records Fail to Drop -

1. Spindle out of adjustment (see "Spindle Adjustment").

More Than One Record Drops at a Time -

1. Center hole in records too large.

2. Spindle slide not fully down. If the spindle slide is not all the way down, more than one record may drop at a time. Check the slide to see if it is free and does not bind at any point.

3. Exceptionally thin records.

Slide-In or Needle Skips Grooves -

Slide-in is where the needle will touch the first groove of a record properly but will jump the grooves forward or back, as though the needle pressure was too light.

1. Check the needle tip. The 78 RPM tip will be especially likely to jump grooves of a microgroove record. This will result in damage to the needle and record. Be sure the microgroove tip is used for 33-1/3 or 45 RPM records.

2. Chipped or damaged needle.

3. Tight pickup cord.

4. Needle pressure too light (see "Needle Pressure Adjustment").

Glide-in On 12" Records -

The term "glide-in" is used to describe the action of the tone arm and needle when the needle glides over the first two or three grooves before seating itself properly. If glide-in occurs:

The pickup cord may be dressed too tight or in such a manner that it interferes with the free movement of the tone arm. Make certain there is sufficient play in the pickup cord.

Stalls During Cycle -

1. Grease or oil on turntable rim or rubber drive surfaces of the motor assembly. Clean with alcohol.

2. Spindle out of adjustment (see "Spindle Adjustment").

3. Check for low line voltage.

Does Not Shut Off Automatically or
When the Tone Arm is Placed on Its Rest -

1. The shut-off ear on the set-down plate (85) is bent and does not strike switch tip properly in its downward travel or when tone arm is placed on its rest.

2. Defective AC switch.

3. There may be a burr on the plastic switch tip which restricts the movement of the tone arm when it is manually placed on its rest. Do not force arm but rather smooth off tip for easy shut-off operation.

Incorrect Turntable Speed -

1. Defective idler wheel or wheel is cocked at an angle.

2. The idler wheel does not rest on the steps of the drive sleeve correctly. To adjust place speed selector in 45 RPM position, loosen nut (67 Figure 4), then turn screw (67A) to raise or lower idler wheel so that its edge is vertically centered on the 45 RPM step of the sleeve. (Second step from top.) After adjustment is made tighten nut (67).

Erratic Speed -

1. Defective idler wheel (Flat spots).

2. Dirt or grease on rubber rim of the idler wheel, drive sleeve or on the rim of the turntable. Clean with alcohol.

3. If the rubber composition of the idler wheel is slick and shiny, replace with new wheel.

Turntable Does not Rotate
When Tone Arm is Placed on Record or
When Reject Button is Depressed -

1. Be sure speed selector (36) is on a speed setting.

2. Reject lever (72) stroke is insufficient. The lever can be bent slightly to increase the lever stroke so that the AC switch tip clears the extension of set-down plate (85) when reject button is depressed. Slight daylite should show between flag end of lever (72) and shaft of reject button (34).

3. Defective AC switch or defective motor.

4. Binding or frozen motor.

Continuous Tripping or
Changes Records Prematurely -

1. Rubber bumper (81A) on velocity trip worn or missing. Replace if required.

2. Reject trip spring (55) binding.

3. Too small a clearance between lip (H) of velocity trip (81) and the edge of main cam. (Refer to Figure 4). Too small a clearance may permit cam actuating pawl (77A) to bounce past the hook end of velocity trip and re-engage main actuating gear (73), causing the mechanism to continue to cycle.

Clearance between lip (H) and main cam (77) should be 1/64" to 1/32" when rubber bumper (81A) is contacting one of the protrusions on main actuating gear (73).

4. Velocity trip (81) scraping on raising lever bracket (88).

Tone Arm Will Not Swing Far Enough Outward
To Set on Tone Arm Rest Properly -
(Refer to exploded view)

1. Bend the stop ear, point (85), on the set-down plate so that the tone arm swings out no further than 1/2" beyond the tone arm rest before starting its inward travel. (Bending the ear up will increase the swing - bending it down will restrict it.)

2. If the set down is affected by this adjustment, readjust set-down.

LUBRICATION

These changers leave the factory completely oiled and lubricated. Under normal conditions this should be sufficient for approximately one year or 1,000 hours of operation. When operated under extreme conditions of dust or heat, they should be oiled more frequently, as required.

Do not permit oil or grease to get on the idler wheel, motor sleeve, turntable drive rim, the atuomatic trip arm clutch or raising disc clutch. Any oil or grease on these parts should be removed using alcohol. The recommended lubricants and points of lubrication are as follows:

(A) No. 10 oil (apply with small oil can or medicine dropper).

1. Motor bearings - (1 drop).

2. Tone arm shaft.

3. Ball bearing assembly (46).

(B) A non fluid lubricant (apply with a small brush).

1. Idler wheel link.

2. Turntable shaft stud.

3. Tone arm hinge pins.

4. Cam (77) and follower.

5. Teeth of main actuating gear (73).

6. Track of main cam (77).

7. Teeth of large (27) and small (29) idler gears.

8. Raising lever bracket bearing surface.

9. Spindle adjusting nut at bottom.

PARTS LIST

Ref. No.	Part No.	Description
	11X956-E	Model B121, Record Ballast Arm and Index Finger Assembly.
	11X956-LY	Model F121, Record Ballast Arm and Index Finger Assembly (includes items 1, 2, 4, 5 & 6).
1	11X925-E	Model B121, Record Ballast Arm.
	11X925-LY	Model F121, Record Ballast Arm.
2	24PO48	Rubber Cushion for Index Finger.
3	11X878-E	Model B121, Turntable Assembly.
	11X878-DJ	Model F121, Turntable Assembly.
4	25P454	Rubber Washer (used on early models).
5	42X299-E	Model B121, Index Finger Arm.
	42X299LY	Model F121, Index Finger Arm.
6	41P1146	Knurled Pin.
7	11X981-E	Model B121, Housing and Tone Arm Rest Assembly.
	11X981-LY	Model F121, Housing and Tone Arm Rest Assembly.
	11X981-1E	Model B123, Housing and Tone Arm Rest Assembly.
	11X981-1LY	Model F123, Housing and Tone Arm Rest Assembly.
	42P296-E	Model B121, Housing Only.
	42P296-LY	Model F121, Housing Only.
	42P314-E	Model B123, Housing Only.
	42P314-LY	Model F123, Housing Only.
8	50P221	Retainer for Turntable.
	21X344	Tone Arm Hinge and Shaft Assembly, includes items 9, 11, 14 and 17 thru 21, (On Changers bearing numbers 375-245 or earlier: Do not order these parts. Replace entire hinge and shaft assembly, order part no. 21X344).
9	26P1285	Tone Arm Height Adjustment Screw.
10	42P300-1E	Model B121, Tone Arm.
	42P300-1LY	Model F121, Tone Arm.
11	21X331	Tone Arm Hinge.
	25P558	Grommet
	25P257	Washer.
	26P965	Mounting Screw for Tone Arm.
12	45P1509	Tone Arm Latch Plate.
13	26 P1191	Self Tapping Screw.
14	26P1246	Adjusting Screw for Set Down.
15	46P299	Compression Spring.
16	49P178	Latch Lever.
	27P278	Latch Lever Pin.
	46P303	Latch Lever Tension Spring.
	45P1511	Latch Lever Spring Anchor Plate.
17	21X335	Tone Arm Counter Balance.
18	26P1247	Hex Nut.
19	26P1267	Pivot Screw.
20	26P1253	Screw.
21	21X343	Tone Arm Shaft.
22	50P125	Hairpin Clip.
23	25P430	Washer.
24	11X935	Idler Wheel.
25	11X976	Spindle.
	11X132	Idler Gear Assembly (includes items 26 thru 29, 31 and 56 thru 58).
26	41P333	Shoulder Screw.
27	47P024	Idler Gear - Large.
28	45P342	Coupler for Idler Gear Assembly.
29	47P023	Idler Gear - Small.
30	46P315	Tension Spring for Slide Plate.
31	25P284	Washer.
32	45P191	Stop Bracket for Tone Arm.
33		Baseplate.
34	49X171-E	Model B121, Reject Button.
	49X171-LY	Model F121, Reject Button.
35	46P297	Compression Spring.
36	42X290-E	Model B121, Speed Selector Knob.
	42X290-LY	Model F121, Speed Selector Knob.
37	78P593-1	Model B121, Speed Indicator Plate.
	78P593-2	Model F121, Speed Indicator Plate.
38	25P430	Washer.
39	25P430	Washer.
	11X950	Idler Wheel Slide Plate Assembly (includes items 40 and 62 thru 67).
40	11X946	Pivot and Slide Plate Assembly.
41	25P535	"C" Washer.
42	25P394	Washer.
43	46P314	Tension Spring for Slide Plate.
44	25P269	Washer for Bearing Race.
45	24P078	Rubber Grommet.
46	11X058	Turntable Bearing Race.
47	25P269	Washer for Bearing Race.
48	26P1045-1	Mounting Screw.
49	46P307	Mounting Screw.
50	26P629	Set Screws for item 53.
51	50P252	Mounting Clip.
52	45P1549	Speed Change Rod.
53	11X954	Selector Link and Hub Assembly.
54	25P447	"C" Washer.
55	46P288	Torsion Spring for Reject Lever.
56	25P284	Washer.
57	25P222	Lock Washer.
58	26P046	Hex Nut.
59	25P289	Cup Washer.
60	25P403	Lock Washer.
61	26P687	Nut.
62	45P1565	Idler Bracket.
63	46P305	Compression Spring.
64	27P282	Groove Pin.
65	11X949	Cam and Stud Assembly.
66	50P125	Retainer Clip.
67	26P077	Hex Nut.
68		Compression Spring (part of item 69).
69	11X953	Set Down Disc Assembly.
70	26P629	Set Screws for item 69.
71	46P319	Tension Spring.
72	11X875	Reject Lever Assembly.
73	11X032	Main Actuating Gear.
74	25P343	Washer.
75	25P342	"C" Washer.
76	25P083	Washer.
77	11X545	Main Cam.
78	41P1152	Clutch Weight.
79	41P1097	Spacer.
80	45P1552	Velocity Trip Arm.
81	11X320	Velocity Trip.
81A	24P023	Rubber Bumper for Velocity Trip.
82	23P009	Felt Washer for Weighted Clutch.
83	11X876	AC Switch Cover Assembly.
	32P089	AC Switch.
	61P359	Spacer Plate for Switch.
	61P360	Insulator for Switch.
84	46P318	Tension Spring for Reject Lever.
85	11X938	Set Down Plate.
86	11X939	Raising Disc.
87	46P022	Spring for Raising Lever Assembly.
88	11X942	Raising Lever Assembly.
89	46P323	Spring for Raising Lever Assembly.
90	15X152	Motor and Top Bridge Assembly (includes Drive Sleeve).
	41P1248	Drive Sleeve (Order part #41P1165 for 15X142 motor on early changers).
91		Spacer.
92	11X936	Link Assembly (Speed Selector).
93	11X941	Spindle Actuating Lever.
	27P217	Rivets for Mounting item 93.
94		Sub-plate Assembly.